

THE ZODIAC.

33



DEVOTED TO SCIENCE, LITERATURE AND THE ARTS.

Vol. II.

ALBANY, NOVEMBER, 1836.

No. 5.

(For the Zodiac.)

GERTRUDE.

BY MISS A. D. WOODBRIDGE.

List to the passers by!

They're hast'ning on, the young, the beautiful,
To scenes of pleasure—to the throng'd *soirée*,
The brilliant party, or the festive dance,
The crowded theatre, or op'ra sweet,
In each, will wand'ring glances oft be turn'd
In search of her, the gifted, lovely, young,
And far-famed Gertrude. She's at home to-night.
Look! who'd not be a glove upon that hand*
On which her brow reposes? The other rests
Upon the page she's reading. Ah! that sheet
Was fill'd no doubt by one she fondly loves,
For see! it meets her lip.

She rises now—

Grace! thou'rt a name for her! She moves not like
A being of the earth. We almost feel
'Tis sacrilege to gaze upon that face,
Where thought, emotion, beauty, love, all strive
For th' expression.

Hark! she touches now

The tones of her guitar, and wakes that voice
Whose tones thrill o'er the spirit. Hush! she sings:

"He's away! he's away! he's away!

Yet I know he is constant and true;
Still my path is illum'd by Love's ray,
Which tho' absent, brings him to my view:
Yet 'tis darkness, compar'd with the beam
Which his presence flings over me still,
When with Ernest, why should I not deem
That the world contains nothing of ill.

He's away! he's away! he's away!

Yet his voice will soon fall on mine ear;
Its tones will tempt bliss here to stay,
While e'en happiness lingers to hear.
When with Ernest why should I not lose
All thoughts of the world and its hum?
And his smile above fame ever choose,
He will come! he will come! he will come!"

Her song is done—

Footsteps approach—she starts! The door is op'd—
It must be—'tis her lover!—But enough.

Albany, November, 1836.

* "Oh! that I were a glove upon that hand!"
Romeo and Juliet.



NOVEMBER.

Next was November; he full grown and fat
As fed with lard, and that right well might seeme;
For he had been a fattening hog of late,
That yet his brows with sweat did reek and steam;
And yet the season was full sharp and breeme;
In planting eke he took no small delight,
Whereon he rode, not easie was to deeme,
For it a dreadful Centaure was in sight,
The seed of Saturn and fair Nais, Chiron hight.
Spenser.

SAGITTARIUS, THE ARCHER.—This is the
ninth sign and the tenth constellation of the Zodi-
ac. The sun enters this sign on the 22d of No-
vember, but does not reach the constellation be-
fore the 7th of December.

The mean temperature of the month at Albany,
as deduced from the observations of twenty years,
is 38°82'. The highest observed temperature was
69°, and the lowest 8°; giving the extreme month-
ly range 61°. The average amount of rain falling
during the month, is 3.143 inches.

(For the Zodiac.)

THE "COMBATS DES ANIMAUX,"
AT PARIS.

The excitement derived from the spectacle af-
forded in this amphitheatre, where animals are
made to fight and tear each other to pieces, seems
to be quite in character with the feelings of its pa-
trons, the ferocious and blood-thirsty inhabitants of
the remoter suburbs and outskirts of Paris.

The unfavorable epithets which I have assigned
to the people, may seem undeserved to those who
see in the order and force with which the law holds
its supremacy during periods of tranquillity, a mo-

ral and willing subjection on their part to its ordi-
nances, but on closer inspection, it will be found
that order is only maintained by the unceasing and
vigorous superintendence of a powerful police,
backed by a large military force, who are of them-
selves, when so inclined, competent to maintain a
larger body of men than the Parisians in complete,
nay, abject submission to the ruling powers. The
class that I particularly allude to, are now designat-
ed in the Parisian Journals *les ouvriers*, or working
class, and they have, since the first revolution, re-
ceived this appellation in lieu of the contemptuous
one of *canaille*, which was first applied to them by
the haughty and degenerate nobility, before that
period. To give a notion of the utter degradation
meant to be conveyed by this word, it will suffice
to explain the meaning. *Canaille* signifies the gut-
ter or canal in the centre of the more ancient streets
of Paris, which is constantly streaming with offals
and liquid mud.

Although, politically speaking, they hold a high-
er rank in the constitution, their moral deportment
remains the same, and by all who have any stake
or interest in the permanence of the laws, they are
regarded with horror and detestation. In the many
conversations I have held concerning them with
respectable persons, whose opinions were unbiased
by the possession of either wealth or rank, they
were invariably termed by the original appellation
of *canaille*, and otherwise spoken of as being among
the most fallen of our race.

The total decay of morals observable in their
mode of life and sentiments, must be referred to
the tremendous convulsions and unspeakable atroci-
ties that marked the era of the first revolution;
from the effects of these they have not yet recover-
ed, nor can it be reasonably expected that any re-
formation will be effected, until the more than Pa-
gan infidelity unblushingly avowed, and licentious-
ness of every species openly pursued, shall be re-
placed by the light of a pure religion, and the con-
duct of those to whom they naturally look up to as
examples, shall have removed from the capital of
France the foul stain of corruption attached to its
fame. If I have expressed myself thus vehement-
ly, it is because the truth of every word laid down
here, has been tested by actual observation.
After passing the *Barriere des Combats*, one of
the outer gates of the city, which receives its name
I believe, from the amphitheatre, erected immedi-

ately beyond, our steps were attracted towards a large wooden building by the incessant yelpings and barkings of numberless dogs. The houses in the neighborhood were nearly all *cabarets* or wine-shops. This beverage is sold at a cheap rate here, as not having passed the *barriere*, the town tax is not levied on it; they were filled with persons who were busily employed in swallowing the stimulus, and discussing the delights to be soon afforded them in the approaching entertainment, and the space before the building was occupied by groups of men and women, whose general appearance, although picturesque, unequivocally demonstrated the small distance in point of humanity that separated them from the savage animals within.

The tickets of admission were sold by a woman; and I may here mention, that in all places of public amusement, the box offices are attended by women, from the Grand French Opera down to the *Marionette*. You will find the fair sex occupying the above situation, as well as that of box openers.

The interior of the amphitheatre disclosed a large circular area, enclosed by a shed, the upper part arranged into boxes and seats, and the lower into cages, through the gratings of which we distinguished the wild beasts. One of these was a wild boar, an animal that it had long been my desire to see. At that time it was passing its long curved tusks upwards and downwards along the bars of its prison, and at the same time emitted from its mouth a prodigious quantity of white foam, which not only covered the bars, but even descended to the ground beneath. The colour of its hide was of a beautiful iron grey, and the bristles were long and collected into shaggy tufts. Its small fiery eye was a type of the indomitable spirit within—but its size was less than that of many of its more civilized brethren, who walk in security the streets of Albany.

Two men now appeared at the opposite sides of the arena, leading in a pair of white short legged and pink-eyed bull terriers. They were allowed to gaze at each other until thoroughly enraged, when they were let loose, and fought like incarnate devils. Several other single pairs followed this, and the first part of the spectacle concluded with a general *melee*. In order to prevent fatal consequences, a man went about furnished with a long pole, having a flat piece of iron at the extremity, which was inserted as a lever into the dog's mouth when he held on too obstinately, or had seized his antagonist by the throat. This operation was in one instance quite necessary, and the animal, when released from the deadly gripe, lay for some time on his side with hardly any signs of life.

A wolf was brought in and secured to the centre of the ground by a thin rope, which, however, permitted a long run round. The gaunt and famished creature, true to its instinct, betrayed the most unbounded terror, and in the efforts to escape, it turned over and made several somersets, as it galloped round the ring, while occasionally it stopped to gaze at the door through which the dogs were to appear. These to the number of seven or eight rushed in, but the aversion which dogs naturally have to the wolf, proved in this instance so great, that a considerable time elapsed ere any of them ventured to attack it in earnest. At length, encouraged by the cowardice of the animal that stood trembling before them, one more daring than the rest, led the way, and his example was quickly followed by the others; the wolf at first made no resistance, but by degrees it became outrageous, and seized its foes right and left with its shark-like

mouth, which caused them for the first time to howl with pain, and several slunk away with their tails between their legs. The sullen silence maintained by the wolf during the contest, was as remarkable as the ease with which it gained the victory, for the apparent disparity between its means of resistance, and the formidable band of enemies opposed to it, seemed to place defeat beyond a doubt. Its size was about that of a large greyhound, and from its extreme emaciation, I judged that its weight was even less.

It required the force of three men to pull the unwilling bruin out of his cage, and when left alone in the arena, he sat on his haunches the very picture of woe, and gave vent to his misery in piteous moans. His teeth were filed down to a level with the gums, and the miserable condition he was reduced to, proved how unfavorable to obesity is unkind treatment. Without entering into the details of his sufferings, it will be enough to learn, that he was taken back to his den with his mouth and sides streaming with gore, where he sought the sympathy and consolations of his companions, who, to the number of three or four, politely made way for him as he entered.

A bull next appeared, his horns covered with folds of cloth, to prevent his goring the dogs. He was a small but beautiful creature, and his legs were as symmetrically formed as those of an antelope. Unlike his predecessors, he seemed to prepare for the contest—he moved slowly forward and bellowed in a tone of defiance as he pawed the ground. He afterwards defended himself valiantly and tossed the dogs with astonishing strength high in the air; but he retired from the list sadly mangled, with his neck and the loose skin that hangs between the forelegs much torn.

The last part of this inhuman exhibition was the least cruel and abundantly amusing. In the course of a few minutes, a donkey trotted into the ring, propelled to this unusual display of alacrity by a severe blow applied to his hinder parts; when he had recovered from his astonishment, and began to reflect upon his situation, a cloud of disagreeable recollection doubtless crossed his brain, for he immediately set to braying in the most absurd fashion. As far as personal appearance was concerned, it was quite in his favor; he was a well fed and well curried fellow, neat in the limbs and free from the stupid look, peculiar to "that most patient of God's creatures." He was interrupted in the midst of his song by three of the fiercest dogs flying at him simultaneously; but they found in him an enemy not to be despised, for he dodged, kicked, and galloped about in splendid style, and he evidently acted on the old saying ascribed to one of his ancestors: "Every man for himself and God for us all, as the Jackass said, when he danced among the chickens." He sent them sprawling in every direction, and directed his heels with such precision, that the crest fallen dogs not merely gave up the contest, but several very nearly gave up the ghost.

The gallant hero was led back to his stable in triumph, and without having received a single wound, amid the reiterated cheers and laughter of the spectators.

On gala days, when the receipts at the door will repay the loss of the animals, the exhibition is of a far more sanguinary description, and more gratifying to the taste of the *canaille*, than the less fatal show got up on the present occasion, the last merely serves as a *whet* to the grand entertainment.

E.

(For the Zodiac.)

THE LANGUAGE OF THE FLOWERS.

How is the book of nature filled
With lessons that we all may learn!
What precious precepts are instilled,
As each successive page we turn!

I love to walk at dawn of day,
With open eye, and ear, and heart;
To list to what the flowers say,
And learn the lessons they impart.

For flowers have a voice for me;
They many a holy lesson teach;
And happier surely should I be,
If I but learned and practiced each.

The fragrant herb on which I tread,
Although I crush it to the ground,
Will, as it raises up its head,
With incense straw the air around.

Thus am I taught forgiveness should
At all times in my heart abound;
And that for evil, greater good
Should ever in return be found.

I mark the lillies as they grow,
Profusely scattered o'er the vale;
And as the zephyrs o'er them blow,
Their fragrance scents the evening gale.

Who clothed them in that robe of white,
And set them 'mid those leaves of green?
Who gives them dew, and air, and light?
For lillies toil not, neither spin.

'Twas God who made and clothed them so,
Hung each upon its graceful stem;
And kings, in all their glittering show,
Are not arrayed like one of them.

The snow drop rears its little head,
The beautiful but pallid thing!
First offspring of the flower bed,
And earliest messenger of spring.

It is not there among the flowers
When summer skies are bright and warm;
But comes in spring's uncertain hours,
Like a kind friend who braves the storm.

The violet, with azure eye,
Says "strive not in the world to shine;
"Far from its vain allurements fly,
"And let humility be thine."

The daisy, with its velvet leaf,
Its rays of purple, disk of gold,
Says, "I am glorious, but yet brief;
"In me a type of life behold."

The grass, which in the morn is green,
And groweth up, how bright and gay!
But in the evening it is seen
Cut down, and withering away.

And as the soft winds o'er it pass,
It whispers, "Come and learn of me,
"For thou may'st wither like the grass,
"And be cut down as suddenly."

Each flower has language in its bloom,
And when it withers, droops and dies,
It says, "you hasten to the tomb,
"Prepare for death, be early wise."

ELIZABETH.

[For the Zodiac.]

BIOGRAPHY OF TALLEYRAND.

CHAPTER V.

The year 1790 saw Talleyrand as one of the most influential and active actors of that revolution, of which every enlightened and liberal minded man throughout the world had promised themselves a far different result, as history has proved us to have been. It is in truth the mother of our delightful *Holy Alliance*.

The mobs began now to rise every where, and on every occasion, threatening the most frantic violence; the proceedings of the national assembly became tumultuous—the soldiery was seduced—the resistance to authority undisguised, and the manœuvres, clamours and calumnies against the King and Queen, may truly be ascribed to the Duke of Orleans, to Mirabeau, Talleyrand, and some other hidden agents of the same faction.—This is evident, because when after the barborous scenes at Versailles on the 5th and 6th of October, Lafayette, by an exertion of firmness, forced the Duke of Orleans to pass to England, Paris remained quiet.

In June of the same year, Mr. de Talleyrand gave in to the assembly a project of a decree for establishing a uniform system of weights and measures, and a second relative to the mode of celebrating the federation of the 14th of July, at which religious ceremony he was deputed by the municipality of Paris, to officiate pontificially. The assemblage of the national militia was to take place in the Champ de Mars; and it being necessary to erect around the extensive space, eminences of green turf, to contain the spectators. "Such," says Madame de Staël, "was the patriotic enthusiasm, that women of the first rank were seen joining the crowd of voluntary laborers, who came to bear a part in the preparations for the fête."

On the appointed day, all Paris moved in a mass to the federation, just as it had moved the year before to the destruction of the Bastille. In a line from the military school, steps had been raised with a seat to accommodate the King, Queen and Court; at the other extremity was seen an altar, prepared for mass, where the bishop of Autun appeared at the head of two hundred priests, all clad in fine white albs, with a tri-colored girdle, to receive the new constitutional oath—the Court, within the twelve months—of fidelity to the nation, the King and the law.

When Lafayette came to receive him on horseback, at the head of his staff, Talleyrand made him a sign to approach, and whispered in his ear—"Well my dear General, this is a pretty fine farce; I hope you will make it short, and let us not laugh too much!" Lafayette answered not a word, but turned away with visible marks of disgust. During the greater part of this day the rain fell so heavily, that every one was wet. Talleyrand, in the midst of the high mass, exclaimed two or three times, "*quelle soupe aux chiens! Elle va éteindre le feu sacré de la liberté*"—(what a torrent of rain! it will extinguish the sacred fire of liberty!) and having said these too prophetic words, he continued to say his mass, and this done, he pronounced a benediction on the royal standard of France, and on the eighty-three banners of the departments, which waived around it before the altar.

The next day, on the 15th of July, he wrote to his mistress, the Countess of Fla. —, the following remarkable letter, dated at 8 o'clock in the

morning:—"If you were as well gratified with your place at the ridiculous fête of yesterday, as I was with seeing and admiring you where you were seated, you must have supported the storm and the deluge with the same philosophy as your friend. Had not the Duke of Orleans forced me to pass the evening with him, I intended to have seen you last night to unbosom my mind concerning the occurrences of this day, which have made so many different and opposite impressions. For my part, I do not know, *entre nous*, whom to pity the most, the sovereign or the subjects, France or Europe. Should the Prince confide in the affection of the people he is undone; and should the people not mistrust the character of the Prince, torrents of blood will be required for years, to wash off a licentious enthusiasm of some few months, and the innocent must be involved in the same ruin with the guilty. In either case, the tranquillity or liberty of Europe will suffer. Far be it from me to suspect Louis XVI of being blood thirsty; but a weak King, surrounded with bad counsellors, easily becomes a cruel one, or, which is the same, from weakness or seduction, permits them to exercise cruelties under the protection of his name and authority. In whatever light, therefore, I regard the consequences of the events of yesterday, I shudder, particularly since my interview with the Duke. No crimes are too atrocious for his ambitious and vindictive heart to conceive. Fortunately for my country he wants courage and resolution to execute with his hand the horrid conceptions of his head.

"Mirabeau is now as disgusted with him as I am myself. We have frequently great difficulty in concealing the contempt he inspires. Sieyès seems, however, always the same, always cringing, approving, or advising. He is jealous of us, and mistrusts us, but we are too much upon our guard to give him reason to suspect, before it is ripe, our intention of leaving him and his hero where we found them. He asked me, with a sardonical sneer, in the presence of the whole company, consisting of sixteen, how I could retain my gravity in performing so adroitly the *buffoonery in the Champ de Mars*—to how many christians, among the hundred thousand spectators, I thought I administered the national christian oath? Upon declaring my ignorance, he said, '*I have made a calculation, and do not believe they amount to five hundred, including the Duke, you, myself, and our party.*' To tell you the truth, I apprehend that he has rather over-rated the number of the *faithful*, and though a *philosopher*, I deplore the progress of infidelity among the people. I am of the same opinion with Voltaire, that whether we believe in God ourselves, or not, it would be dangerous to the whole community, should the multitude think that they can, with impunity, and without fear of punishment in the next world, rob, poison, stab, hang, or behead in this. This anti-social doctrine is to be dreaded more now than ever, because the laws are without vigor or support, and the mass of the people consider themselves above them; and what is most deplorable, it is the interest of the assembly to keep up the spirit of this moral and political anarchy.

"I am well aware that it is not quite gallant to fill with philosophy and politics so much of a letter from a lover to his beloved; but to whom can I confide, with safety, the thoughts and secrets of my mind, if not to you, who are so much above the prejudices of your sex, and the discretions of mine?—Let this be my apology.

"I hope that it did not escape your penetration to what divinity I yesterday addressed my prayers and my oath of fidelity at the altar; and that you alone were the *supreme being* I worshipped and ever shall adore.

"How is it with your *embonpoint*? Is our Charles to have a brother or a sister, or was it only a false alarm? Embrace our dear boy. I shall sup with you," &c. &c.*

About this time the King was forced to select a new cabinet from among those who had been his greatest enemies, and formed what is called the jacobin administration. Talleyrand, the Lameths, Barnave, and other secret counsellors, in whom the King trusted, were therefore more consulted than ever; but as they were suspected by the jacobins, the night was the only time when they dared shew themselves at the Tuilleries. But notwithstanding this precaution, both their presence in the palace, and frequently the very subject of their deliberations, were mentioned in the public prints.—This perfidious publicity Louis XVI ascribed to the indiscretions of inferior persons about his court, though in fact it originated from Talleyrand, who every morning either saw Petion or sent him regular reports of what was discussed. Every means, therefore, employed secretly by the King, to avoid a rupture with the Emperor and the German empire, were communicated to, and counteracted by his jacobin ministers, who breathed nothing but hostilities, and employed all their efforts in rendering an accommodation or explanation impossible; and on the 20th of March war was declared against Francis II, as King of Hungary and Bohemia, who had not yet succeeded his father Leopold II, as chief of the German empire.

On the first of May, Louis XVI publicly appointed Chauvelin his minister to Great Britain, and Talleyrand secretly as his assistant. In the confidential letter from the King of the French, to the King of England, dated Paris, May, 1792, he says among others:—"If I do not give the same rank to the minister whom I have sent to you, you will nevertheless perceive that by associating in the mission with him Mr. de Talleyrand, who, by the letter of the constitution can sustain no public character, I consider the success of the alliance, in which I wish you to concur with as much zeal as I do, as of the highest importance. I consider it as necessary to the stability of the respective constitutions, and to the internal tranquillity of our two kingdoms; and I will add, that our union ought to command peace to Europe."

(Signed)

LOUIS.

(For the Zodiac.)

THE DYING EXILE.

Oh, brightly gleam your olive groves,
Your golden heav'ns are bright,
The glitt'ring blue-fly gladly roves
Amid your bowers of light;
But, brighter, fairer far, for me
Our northern forests bloom,
Your flow'rets waft too heavily
Their burdens of perfume.

* See *la Correspondence d'infâmes émigrés*, &c. tome iv, p. 11 & 12. In the preface of this work it is said that the publisher printed these letters by the order of the *Comité de Salut public*, where all the originals were deposited, and might be seen and compared with the impression. This letter is a characteristic proof of the corrupt levity, social depravity and religious profaneness of the greatest part of the French nobility at that time, and fully in accordance with Talleyrand's well known character.

The sky is all one blaze of gold,
Where is the softer ray
That danced upon our homestead old
Through all the long bright day?
My eye is weak—it cannot rest
Upon yon glowing sky,
The gales are all with scent oppress'd
That sweep my pillow by.

And where the dewy flowers I love,
The lilly of the stream?
Your flow'rs have woo'd the heav'n above,
They wear its own bright beam:
The crimson rose, the glowing dye
Your purple violets wear,
They flash upon my dying eye
With a too fervid glare.

My mother's voice—where breathes that tone
My young heart yearns to hear?
Thinks she her eldest born—her own,
The loved of many a year,
Dies here without her hand to part
The damp curls from her brow,
Or quell the beatings of this heart
That throbs so wildly now?

Far where the cedar boughs branch high,
A band of children play,
They chase the gilded butterfly,
And laugh the hours away.
There 'mid that happiest spot on earth,
Across the broad blue main,
My mother's smile lights up the hearth,
And reck's not of my pain.

How can I die here—in fond dreams
I pine to see my home;
To dip my brow in those cool streams
That by our forests roam.
The visions grow more bright and clear,
Your bowers are fading fast,
Is this the land so loved, so dear,
My sunny home at last!

Bright flushed her cheek, her deep blue eye
Seemed fixed on some fond dream,
The noontide rays that wandered by,
Scarce wore so bright a beam.
One half-breathed word—her pale lip wore
A happy smile impressed,
"Home, home," she faintly said once more—
The Exile was at rest. EDITH.

MEMOIRS OF MY LIFE.

By an Old Soldier.

CHAPTER I.—MY BIRTH AND EDUCATION.

I was born in a *château*; my father was neither *Monsieur le Baron de Tundertentronk*, nor were the windows of his *château* without panes of glass. His large mansion had all the conveniences and brilliancy of the elegantest castles of the Duchy of H—.

The 23d of September, 17**, was a troublesome day for our family; my father had sent for the most famous physician from the capital, besides his own who resided with him, and attended the inhabitants of his vast domains. Both were destined to assist my entrance in this world "of sufferings and misery," as my good grandmother exclaimed daily, with her twenty thousand a year, and living in splendor and luxury.

Some dozen old and young aunts, cousins and other relations, claiming anxiously the honor of their alliance since the fifteenth century, had as-

sembled before the arrival of the doctor. My parents were often much amused with the manner in which they endeavored to prove the degrees of their affinity with our family. Two powerful reasons excited in them this anxiety of relation: *vanity* and *avarice*. The former was flattered by the acknowledgment of that kindred, and as my father and mother possessed great wealth, these legions of dear cousins, and cousines, lived in the charitable hope, "that God might relieve my parents soon from this world of sins and misery, and not forget them in their *will*!" They, my cousins, had but a scanty six thousand a year, and thought themselves poor and miserable. What a pity!

Twenty-four hours had scarcely expired after my entrance in the world, when the evil spirit, *etiquette*, came to trouble the satisfaction of the house. My grandmama, and the whole host of aunts and cousins, spoke of nothing else to my very weak and suffering mother, than "who should have the honor of being the godfather and the godmother of a little baby," twenty-four hours old! Each of them proposed her candidate, whom each one supported with great loquacity and noise, and sometimes the discussion became so warm and obstinate, that my mother entreated them in vain, to trouble her not at present with such matters; she would settle this with my father at another time. They stopped for a while, but soon commenced again, in spite of all the urgent entreaties of my parents and the doctors. My father was at last obliged to recur to the following stratagem. He ordered secretly that various notes should be brought, addressed to the most troublesome of our visitors, by which the one received the news that her husband had broken an arm in falling from his horse at the hunt; the second that her friend, the countess B***, was dangerously ill, and requested her immediate presence; a third was expected home by her dear brother, just arrived from Italy, &c. The bustle was great, and the *château* soon cleared of all those loquacious females.

My father silenced all controversy, by inviting the reigning prince of Anhalt Dessau to be my godfather, and to choose himself the godmother. This prince was a friend of my father, one of those rare sovereigns who wished the happiness of their subjects; he governed and examined by himself, and not through his ministers. He wrote a letter of excuse in saying, that *his duty* going before his friendship and affection, he was unable to absent himself, but that he would send with his daughter the Gen. Count de Lottum, to represent him at the ceremony of christening.

My parents decided that I and my brother Charles, fifteen months older, should be educated together. The principles of my father differed vastly with those of his equals and of the then existing time, full of prejudices, vanity and ridiculous *etiquette*. A little boy for instance of four or five years old, whose parents were of high nobility, could never take a walk, except when accompanied by his tutor and two laquies in full livery behind him. His hat was adorned with white small ostrich feathers, which covered its whole inside, and his coat full of golden laces; then, said they, it was *highly necessary* that the young count should not be confounded with the plebeians! His parents got him a company, a squadron, or the title of gentleman of the king's bedchamber, (*Kammerjunker*).

It is a notorious fact, that in a kingdom in miniature like that of Denmark, of scarcely two millions of inhabitants, is to be found a greater number, a

greater variety of titles, knights and soldiers, than in any other country of Europe. The army is about forty thousand men strong, besides the navy, and more than thirty thousand have titles, ribands, orders, or stars! In every society at Copenhagen, Schleswig, Kiel, &c., is to be found some dozen counsellors called justizrath, hofrath, etatsrath, educationsrath, comerzienrath, legationsrath, conferenzrath, or geheimerath, &c., who have never given any advice, or have been asked for by the king or his ministers. The majority of these titles and orders can be bought at a fixed price, and form a part of the revenues of the crown, like imports and exports of sugar and coffee, &c., in our custom houses. The government, glad to find fools enough to spend their money for baubles and toys, grants, *graciously*, the most humble request of these fools, and ridicules secretly these poor monkeys, an expression which I heard often from the then prince royal, now king of Denmark.

In spite of this general *mania* of titles, my father was one of the few, (among whom was also count Louis Reventlow,) who never applied neither for orders or titles. He was busily engaged to render his numerous peasantry as happy as possible, and was the first in the whole kingdom who gave them freedom and liberty; they were formerly slaves. But his greatest care was to give us a good, sound and liberal education.

We were, my brother and me, simply dressed; in summer, arms, breast, and head uncovered, we ran among the trees and played in the grass of our park under the eyes of our parents, or some faithful servant. When hungry and tired, we returned from our plays and received a piece of brown bread, and nothing else, which we ate with the greatest appetite. If we refused at our ordinary repasts one dish, we received nothing else than dry bread; and the dish remained before us, until the meal was over. We were thus early taught to subdue our reluctance, and to eat all that was given to us.

My father was anxious to harden and give us dexterity and strength. Dry bread, hard mattresses and pillows filled with dry leaves or straw, one linen sheet in summer, a single blanket in winter. We slept the whole year in a cold room without night gowns, flannel, or night caps. We were sometimes awakened by our father in the midst of a winter night; he lead us down in the garden to roll, snow ball and cover us with snow.

Thus we were hardened by degrees, and our physical constitution improved daily. We took every week, in every season and weather, only walks, of six, eight or more miles. These excursions were fixed the day previous by our father, who was our friend and companion; they had always some useful and instructive aim, as to visit a manufactory, a workshop, a natural curiosity, &c. Snow, hail, rain, or the hottest sunshine, have never altered or delayed our pedestrian excursions. During the year we washed or bathed the whole body in cold water, and in winter with snow and ice.

We learned to read and write at the age of nine years old; in one year we improved faster, than we would have done at school at the age of five. We conversed in our amusements, walks, &c., upon various topics, and thus we learned first the geography and history of our country, the practical natural history, the use of plants, &c. &c., finally we entered at once into the most practical branches of a busy life.

I am sorry to say that the so called *infant school*

system, so generally introduced among us, is a very unhappy and even pernicious system for our children. As soon as they are able to walk and talk, they are sent to school where they remain six mortal hours a day, upon benches amongst fifty and more other children, shut up in a damp or too heated school-room, and for what purpose? to learn their letters, to repeat like parrots some spelling of words, to sing a little song, and to dance and clap their hands like the monkeys, at the command of their school-mistress, who arrange them in file and rank.

What has been the pernicious result of these schools? The child is deprived of fresh and wholesome air; the contamination amongst this condensed crowd of children, has naturally an obnoxious, although imperceptible influence upon his health; the constraint and sitting position, interrupted but during some minutes by their slow movements when arrayed in rank and file, are against their will and wishes; their movements are constrained, the development of their moral faculties hindered, even stifled by a frown, or the admonition and punishment of their teacher; they learn early to dissimulate; and these first impressions, once given, our children become by degrees dissemblers, hypocrites, and apes. By the continual sedentary constraint of six school-hours a day, their physical development is greatly prevented, and body and soul tied, if I may be permitted to use this expression; the whole system is a torture to our children, many times a money speculation, a pure show, useless and highly pernicious for our offspring!

This system is good but for those parents wishing to get rid of the care of their children, at least for six hours a day! In speaking thus, a long practice and observation have convinced me of these unhappily too true reflections. I appeal besides to the common sense and the impartial examination of the natural disposition of *every* child to the feelings of the parents.

Our father made us early acquainted how to use money well; and he gave us every week some shillings, which we could spend at our discretion. But every Saturday evening we had to give him an exact account how and in what we had spent the money. On these occasions he gave us the most salutary advice how to employ best our small capital; he tried finally to give us principles in uniting practice with theory, in enabling us thus to be useful to ourselves and others, superior to adversity, and to bear any adverse chance, as well as fortune, with equal resignation, patience and moderation. It is by these means that I have gained that strength of character, that fortitude of mind which has never left me in all the various vicissitudes of my long and eventful life, of which I intend to give here a short sketch.

(To be continued.)

AN ODE TO THE RAIN,

COMPOSED BEFORE DAYLIGHT, ON THE MORNING APPOINTED FOR THE DEPARTURE OF A VERY WORTHY, BUT NOT VERY PLEASANT, VISITOR, WHOM IT WAS FEARED THE RAIN MIGHT DETAIN.

I know it is dark; and though I have lain
Awake, as I guess, an hour or twain
I have not once open'd the lids of my eyes;
But I lie in the dark, as a blind man lies.
O, Rain! that I lie listening to,
You're but a doleful sound at best;
I owe you little thanks, 'tis true,
For breaking thus my needful rest!

Yet if, as soon as it is light,
O, Rain! you will but take your flight,
I'll neither rail nor malice keep,
Though sick and sore for want of sleep.

But only now, for this one day,
Do go, dear Rain! do go away!
O, Rain! with your dull two-fold sound,
The clash hard by, and the murmur all round!
You know, if you know aught, that we,
Both night and day, but ill agree:
For days, and months, and almost years,
Have limped on through this vale of tears,
Since body of mine, and rainy weather,
Have lived on easy terms together:
Yet if, as soon as it is light,
O, Rain! you will but take your flight,
Though you should come again to-morrow,
And bring with you both pain and sorrow;
Though stomach should sicken, and knees should
swell—

I'll nothing speak of you but well,
But only now for this one day,
Do go, dear Rain! do go away!

Dear Rain! I ne'er refused to say
You're a good creature in your way.
Nay, I could write a book myself,
Would fit a parson's lower shelf,
Showing how very good you are.—
What then? sometimes it must be fair!
And if sometimes, why not to-day?
Do go, dear rain! do go away!

Dear Rain! if I've been cold and shy,
Take no offence! I'll tell you why:
A dear old friend e'en now is here,
And with him came my sister dear;
After long absence now first met,
Long months by pain and grief beset—
With three dear friends! in truth we groan
Impatiently to be alone.

We three, you mark! and not one more!
The strong wish makes my spirit sore.
We have so much to talk about,
So many sad things to let out;
So many tears in our eye-corners,
Sitting like little Jacky Horners—
In short, as soon as it is day,
Do go, dear Rain! do go away.

And this I'll swear to you, dear Rain!
Whenever you shall come again,
Be you as dull as e'er you could,
(And by the bye, 'tis understood,
You're not so pleasant as you're good;)
Yet, knowing well your worth and place,
I'll welcome you with cheerful face;
And though you stay'd a week or more,
Were ten times duller than before;
Yet with kind heart, and right good will,
I'll sit and listen to you still;
Nor should you go away, dear Rain!
Uninvited to remain.

But only now, for this one day,
Do go, dear Rain! do go away.

S. T. Coleridge, 1809.

STATE OF GERMAN LITERATURE.

With an Examination of some of the principal objections to its study.

BY THOMAS CARLYLE.

Continued.

We have stated these things, to bring the question somewhat nearer its real basis; not for the sake of the Germans, who nowise need the admission of them. The German authors are not poor;

neither are they excluded from association with the wealthy and well-born. On the contrary, we scruple not to say, that, in both these respects, they are considerably better situated than our own. Their booksellers, it is true, cannot pay as ours do; yet, there as here, a man lives by his writings; and, to compare *Jorden* with *Johnson* and *D'Israeli*, somewhat better there than here. No case like our own noble *Otway's* has met us in their biographies; *Boyces* and *Chattertons* are much rarer in German than in English literary history. But farther, and what is far more important: From the number of universities, libraries, collections of art, museums, and other literary or scientific institutions of a public or private nature, we question whether the chance, which a meritorious man of letters has before him, of obtaining some permanent appointment, some independent civic existence, is not a hundred to one in favor of the German, compared with the Englishman. This is a weighty item, and indeed the weightiest of all; for it will be granted, that for the votary of literature, the relation of entire dependence on the merchants of literature, is at best, and however liberal the terms, a highly questionable one. It tempts him daily and hourly to sink from an artist into a manufacturer; nay, so precarious, fluctuating, and every way unsatisfactory must his civic and economic concerns become, that too many of this class cannot even attain the praise of common honesty as manufacturers. There is no doubt a spirit of martyrdom, as we have asserted, which can sustain this too: but few indeed have the spirit of martyrs; and that state of matters is the safest which requires it the least. The German authors, moreover, to their credit be it spoken, seem to set less store by wealth than many of ours. There have been prudent, quiet men among them, who actually appeared not to want more wealth—whom wealth could not tempt, either to this hand or to that, from their pre-appointed aims. Neither must we think so hardly of the German nobility as to believe them insensible to genius, or of opinion that a patent from the Lion King is so superior to 'a patent direct from Almighty God.' A fair proportion of the German authors are themselves men of rank: we mention only, as of our own time, and notable in other respects, the two *Stollbergs* and *Novalis*. Let us not be unjust to this class of persons. It is a poor error to figure them as wrapt up in ceremonial stateliness, avoiding the most gifted men of a lower station; and for their own supercilious triviality, themselves avoided by all truly gifted men. On the whole, we should change our notion of the German noblemen; that ancient, thirsty, thick-headed, sixteen-quartered Baron, who still hovers in our minds, never did exist in such perfection, and is now as extinct, as our own Squire Western. His descendant is a man of other culture, other aims, and other habits. We question whether there is an aristocracy in Europe, which, taken as a whole, both in a public and private capacity, more honors art and literature, and does more both in public and private to encourage them. Excluded from society! What, we would ask, was *Wieland's*, *Schiller's*, *Herder's*, *Johannes Müller's* society? Has not *Goethe*, by birth a Frankfort burgher, been since his twenty-sixth year the companion, not of nobles, but of princes, and for half his life a minister of State?—And is not this man, unrivalled in so many far deeper qualities, known also and felt to be unrivalled in nobleness of breeding and bearing; fit not to learn of princes, in this respect, but by the example of his daily life to teach them?

We hear much of the munificent spirit displayed among the better classes in England; their high estimation of the arts, and generous patronage of the artist. We rejoice to hear it; we hope it is true, and will become truer and truer. We hope that a great change has taken place among these classes, since the time when *Bishop Burnett* could write of them—'They are for the most part the worst instructed, and the least knowing of any of their rank I ever went among!' Nevertheless, let us arrogate to ourselves no exclusive praise in this particular. Other nations can appreciate the arts, and cherish their cultivators as well as we. Nay, while learning from us in many other matters, we suspect the Germans might even teach us somewhat in regard to this. At all events, the pity which certain of our authors express for the civil condition of their brethren in that country, is, from such a quarter, a superfluous feeling. Nowhere, let us rest assured, is genius more devoutly honor-

ed than there, by all ranks of men, from peasants and burghers up to legislators and kings. It was but last year that the Diet of the Empire passed an act in favor of one individual poet: the final edition of Goethe's works was guaranteed to be protected against commercial injury in every state of Germany; and special assurances to that effect were sent him, in the kindest terms, from all the authorities there assembled, some of them the highest in his country or in Europe. Nay, even while we write, are not the newspapers recording a visit from the Sovereign of Bavaria in person, to the same venerable man; a mere ceremony, perhaps, but one which almost recalls to us the era of the antique Sages and the Grecian Kings?

This hypothesis, therefore, it would seem, is not supported by facts, and so returns to its original elements. The causes it alleges are impossible: but what is still more fatal, the effect it proposes to account for has, in reality, no existence. We venture to deny that the Germans are defective in taste; even as a nation, as a public, taking one thing with another, we imagine, they may stand comparison with any of their neighbors; as writers, as critics, they may decidedly court it. True, there is a mass of dullness, awkwardness, and false susceptibility in the lower regions of their literature: but is not bad taste endemical in such regions of every literature under the sun? Pure stupidity, indeed, is of a quiet nature, and content to be merely stupid. But seldom do we find it pure; seldom unadulterated with some tincture of ambition, which drives it into new and strange metamorphoses.—Here it has assumed a contemptuous trenchant air, intended to represent superior tact, and a sort of all-wisdom; there a truculent atrabilious scowl, which is to stand for passionate strength: now we have an outpouring of tumid fervor; now a fruitless, asthmatic hunting after wit and humor.—Grave or gay, enthusiastic or derisive, admiring or despising, the dull man would be something which he is not and cannot be. Shall we confess that, of these two common extremes, we reckon the German error considerably the more harmless, and, in our day, by far the more curable? Of unwise admiration much may be hoped, for much good is really in it: but unwise contempt is itself a negation; nothing comes of it, for it is nothing.

To judge of a national taste, however, we must raise our view from its transitory modes to its perennial models; from the mass of vulgar writers, who blaze out and are extinguished with the popular delusion which they flatter, to those few who are admitted to shine with a pure and lasting lustre; to whom, by common consent, the eyes of the people are turned, as to its loadstars and celestial luminaries. Among German writers of this stamp, we would ask any candid reader of them, let him be of what country or creed he might, whether bad taste struck him as a prevailing characteristic? Was Wieland's taste uncultivated? Taste, we should say, and taste of the very species which a disciple of the Negative School would call the highest, formed the great object of his life; the perfection he unweariedly endeavored after, and, more than any other perfection, has attained. The most fastidious Frenchman might read him, with admiration of his merely French qualities. And is not Klopstock, with his clear enthusiasm, his azure purity, and heavenly, if still somewhat cold and lunar light, a man of taste? His *Messias* reminds us oftener of no other poets than of Virgil and Racine. But it is to Lessing that an Englishman would turn with readiest affection. We cannot but wonder that more of this man is not known among us; or that the knowledge of him has not done more to remove such misconceptions.—Among all the writers of the eighteenth century, we will not except even Diderot and David Hume, there is not one of a more compact and rigid intellectual structure; who more distinctly knows what he is aiming at, or with more gracefulness, vigor, and precision, sets it forth to his readers. He thinks with the clearness and piercing sharpness of the most expert logician; but a genial fire pervades him, a wit, a heartiness, a general richness and fineness of nature, to which most logicians are strangers. He is a sceptic in many things, but the noblest of sceptics; a mild, manly, half-careless enthusiasm struggles through his indignant unbelief: he stands before us like a toil-worn, but unwearied and heroic champion, earning not the conquest but the battle; as indeed himself admits to us, that 'it is not the finding of truth, but the hon-

est search for it that profits.' We confess, we should be entirely at a loss for the literary creed of that man who reckoned Lessing other than a thoroughly cultivated writer; nay, entitled to rank, in this particular, with the most distinguished writers of any existing nation. As a poet, as a critic, philosopher, controversialist, his style will be found precisely such as we of England are accustomed to admire most: brief, nervous, vivid; yet quiet, without glitter or antithesis; idiomatic, pure without purism, transparent, yet full of character and reflex hues of meaning. 'Every sentence,' says Horn, and justly, 'is like a phalanx; not a word wrong placed, not a word that could be spared; and it forms itself so calmly and lightly, and stands in its completeness, so gay, yet so impregnable!—As a poet he contemptuously denied himself all merit; but his readers have not taken him at his word: here too a similar felicity of style attends him; his plays, his *Minna von Barnhelm*, his *Emilie Galotti*, his *Nathan der Weise*, have a genuine and graceful poetic life; yet no works known to us in any language are purer from exaggeration, or any appearance of falsehood. They are pictures, we might say, painted not in colors, but in crayons; yet a strange attraction lies in them; for the figures are grouped into the finest attitudes, and true and spirit-speaking in every line. It is with his style chiefly that we have to do here; yet we must add, that the matter of his works is not less meritorious. His criticism and philosophic or religious Scepticism were of a higher mood than had yet been heard in Europe, still more in Germany: his *Dramaturgie* first exploded the pretensions of the French theatre, and, with irresistible conviction, made Shakspeare known to his countrymen; preparing the way for a brighter era in their literature, the chief men of which still thankfully look back to Lessing as their patriarch. His *Iacoon*, with its deep glances into the philosophy of Art, his *Dialogues of Free-masons*, a work of far higher import than its title indicates, may yet teach many things to most of us, which we know not, and ought to know.

With Lessing and Klopstock might be joined, in this respect, nearly every one, we do not say of their distinguished, but even of their tolerable contemporaries. The two Jacobis, known more or less in all countries, are little known here, if they are accused of wanting literary taste. These are men, whether as thinkers or poets, to be regarded and admired by their mild and lofty wisdom, the devoutness, the benignity and calm grandeur of their philosophical views. In such, it were strange, if among so many high merits, this lower one of a just and elegant style, which is indeed their natural and even necessary product, had been wanting. We recommend the elder Jacobi no less for his clearness than for his depth; of the younger, it may be enough in this point of view to say, that the chief praisers of his earlier poetry were the French. Neither are Hamann and Mendelsohn, who could meditate deep thoughts, defective in the power of uttering them with propriety. The *Phædon* of the latter, in its chaste precision and simplicity of style, may almost remind us of Xenophon: Socrates, to our mind, has spoken in no modern language so like Socrates, as here, by the lips of this wise and cultivated Jew.*

* The history of Mendelsohn is interesting in itself, and full of encouragement to all lovers of self-improvement. At thirteen he was a wandering Jewish beggar, without health, without home, almost without a language, for the jargon of broken Hebrew and provincial German which he spoke could scarcely be called one. At middle age, he could write this *Phædon*; was a man of wealth and breeding, and ranked among the teachers of his age. Like Pope, he abode by his original creed, though often solicited to change it: indeed, the grand problem of his life was to better the inward and outward condition of his own ill-fated people; for whom he actually accomplished much benefit. He was a mild, shrewd, and worthy man; and might well love *Phædon* and Socrates, for his own character was Socratic. He was a friend of Lessing's: indeed, a pupil; for Lessing having accidentally met him at chess, recognized the spirit that lay struggling under such incumbrances, and generously undertook to help him. By teaching the poor Jew a little Greek, he disenchanted him from the Talmud and the Rabbins. The two were afterwards co-laborers in Nicolai's *Deutsche Bibliothek*, the first German *Review* of any character;

Among the poets and more popular writers of the time, the case is the same: Utz, Gellert, Cramer, Ramler, Kleist, Hagedorn, Rabener, Gleim, and a multitude of lesser men, whatever excellencies they might want, certainly are not chargeable with bad taste. Nay, perhaps of all writers, they are the least chargeable with it: a certain clear, light, unaffected elegance, of a higher nature than French elegance, it might be, yet to the exclusion of all very deep or genial qualities, was the excellence they strove after, and for the most part in a fair measure attained. They resemble English writers of the same, or perhaps an earlier period, more than any other foreigners: apart from Pope, whose influence is visible enough, Beattie, Logan, Wilkie, Glover, unknown perhaps to any of them, might otherwise have almost seemed their models. Goldsmith also would rank among them; perhaps in regard to true poetic genius, at their head, for none of them has left us a *Vicar of Wakefield*; though, in regard to judgment, knowledge, general talent, his place would scarcely be so high.

The same thing holds, in general, and with fewer drawbacks, of the somewhat later and more energetic race, denominated the *Göttingen School*, in contradistinction from the *Saxon*, to which Rabener, Cramer, and Gellert, directly belonged, and most of those others indirectly. Höltz, Bürger, the two Stollbergs, are men whom Bossu might measure with his scale and compasses as strictly as he pleased. Of Herder, Schiller, Goethe, we speak not here: they are men of another stature and form of movement, whom Bossu's scale and compasses could not measure without difficulty, or rather not at all. To say that such men wrote with taste of this sort, were saying little; for this forms not the apex, but the basis, in their conception of style; a quality not to be paraded as an excellence, but to be understood as indispensable, as there by necessity, and like a thing of course.

In truth, for it must be spoken out, our opponents are so widely astray in this matter, that their views of it are not only dim and perplexed, but altogether imaginary and delusive. It is proposed to school the Germans in the Alphabet of taste; and the Germans are already busied with their *Accidence*! Far from being behind other nations in the practice or science of Criticism, it is a fact, for which we fearlessly refer to all competent judges, that they are distinctly, and even considerably in advance. We state what is already known to a great part of Europe to be true. Criticism has assumed a new form in Germany; it proceeds on other principles, and proposes to itself a higher aim. The grand question is not now a question concerning the qualities of diction, the coherence of metaphors, the fitness of sentiments, the general logical truth, in a work of art, as it was some half century ago among most critics: Neither is it a question mainly of a psychological sort, to be answered by discovering and delineating the peculiar nature of the poet from his poetry, as is usual with the best of our own critics at present; but it is, not indeed exclusively, but inclusively of those two other questions, properly and ultimately a question on the essence and peculiar life of the poetry itself. The first of these questions, as we see it answered, for instance, in the criticisms of Johnson and Kames, relates, strictly speaking, to the *garment* of poetry; the second, indeed, to its *body* and material existence, a much higher point; but only the last to its *soul* and spiritual existence, by which alone can the body, in its movements and phases, be *informed* with significance and rational life. The problem is not now to determine by what mechanism Addison composed sentences, and struck out similitudes, but by what far finer and more mysterious mechanism Shakspeare organized his dramas, and gave life and individuality to his Ariel and his Hamlet. Wherein lies that life; how have they attained that shape and individuality? Whence comes that empyrean fire, which radiates their whole being, and pierces, at least, in starry gleams, like a diviner thing, into all hearts? Are these dramas of his not verisimilar only, but true; nay, truer than reality itself, since the essence of unmixed reality is bodied forth in them under more expressive symbols? What is this unity of theirs; and can our deeper inspection discern it to be indivisible, and existing by necessity, which, however, in the hands of Nicolai himself, it subsequently lost. Mendelsohn's Works have mostly been translated into French.

because each work springs, as it were, from the general elements of all thought, and grows up therefrom, into form and expansion, by its own growth? Not only who was the poet, and how did he compose; but what and how was the poem, and why was it a poem and not rhymed eloquence, creation and not figured passion? These are the questions for the critic. Criticism stands like an interpreter between the inspired and the uninspired; between the prophet and those who hear the melody of his words, and catch some glimpse of their material meaning, but understand not their deeper import. She pretends to open for us this deeper import; to clear our sense that it may discern the pure brightness of this eternal beauty, and recognize it as heavenly, under all forms where it looks forth, and reject, as of the earth earthy, all forms, be their material splendor what it may, where no gleaming of that other shines through.

(To be continued.)

(For the Zodiac.)

REMARKS ON WALKER'S DICTIONARY.

It was for a long time a common opinion that Walker's Dictionary is the standard of pronunciation in England. This opinion was seconded and extended by the most assiduous efforts of his publishers in this country. The business of booksellers and publishers of books is to sell books; not to examine their merits; and if they sell incorrect books, they do not deem themselves responsible for the propagation of errors they contain. It seems, however, that English authors of a later date contest the authority of Walker; and gentlemen who have visited England, and some English gentlemen who have visited the United States, concur in the fact that Walker is not generally used as a standard of orthoepy. In several classes of words, his notation of sounds is condemned by Jones, Jameson and Knowles.

One of the first things to be observed in Walker's analysis of the sounds of English letters, is the improper description he gives of the letters. Thus the mute labial *p* he calls *sharp* and *b* *flat*, *f* *sharp*, *v* *flat*, *t* *sharp*, *d* *flat*; *th* *sharp*, as in *eth*; *flat* in *the*, &c. But these epithets are inaccurate; and he might as well have denominated them *sweet* and *sour*. The proper distinction is better expressed by *close* and *open*, or *aspirated* and *vocal*. The letter *p* represents a close articulation, which interrupts all sound, the moment the organs come in contact, as in *ep*; in uttering *b* the junction of the organs is less close, and the sound is not instantly interrupted, as in *eb*. The letter *f* presents merely a breathing without sound; the letter *v* is vocal, as in *ev*. So *eth* in *thin* and *truth* is a mere dental aspirate; in *thou*, *that*, it is vocal.

Walker says that *a* preceded by the gutturals (palatale) hard *g* and *c*, is softened by the intervention of a sound like *e*, so that *card*, *cart*, *guard*, *regard*, are pronounced like *heard*, *heart*, *gheard*, *regheard*. But in his notation in the vocabulary he forgets his rule in all these words, except *guard*, and later authorities reject the rule. In England, as in this country, no sound of *e* is uttered in these words.

The letter *i*, when long, Walker says is composed of the sound of *a* in *father*, and of *e* in *he*, pronounced as closely together as possible; it is therefore a diphthong. But this is not accurate. The letter is diphthongal, but we do not open the organs so much to utter the initial sound of *i* as we do to utter *a* in *father*. The difference is slight, but very perceptible.

The short sound of *i* is heard in *him*, but says Walker, it cannot be called *short*, when ending an unaccented syllable, as it is not closed by a consonant; yet it has *half* its diphthongal sound, the sound

of *e*. This is a great mistake. The sound of *i* in *him*, *thin*, is precisely the same as in the second syllable of *vanity*, *quality*. It is nearly, if not exactly the short sound of long *e*; hence when *little*, and *tiny* are uttered emphatically, these words are pronounced *leetle*, *teeny*.

When the letter *i* is preceded by hard (close) *k* or *g*, Walker says it is pronounced as if an *e* were inserted before *i*; thus *guide* is *gyide*; *kind* is *kyind*, &c. This resembles the old vulgar yankee pronunciation of *cow*, *county*, as if written *keow*, *keounty*. Jameson rejects this pronunciation; and if now heard at all, it is only among dandies. It is miserable affectation.

The first sound of *u* heard in *tube* and *cubic*, Walker says is diphthongal, as if *e* were prefixed. Thus *tube* is pronounced *teub*. Never was a greater mistake; the letter *u* is not thus pronounced by good speakers, either in England or the United States. In uttering *u* in *cubic*, *tube*, *tribunal*, *superior*, *tumult*, no good speaker opens the organs to the position for sounding *e*. The observation of Walker proves him to have had a very inaccurate ear. This is certain from his acknowledging that he considered the sounds of the vowels in *flee* and *meet* to be different from those in *flea* and *meat*, until Garrick told him that he could perceive no difference in the sounds of these words.

The unaccented *y* at the end of a syllable, Walker says, is that of the first sound of *e*, that is, like *e* in *me*. Thus *vanity*, *pleurisy*, are to be pronounced *vanitee*, *pleurisee*. This is an egregious mistake; *y* in such syllables being precisely the same as the preceding *i* in *vanity*, and in *him*. It is the short *i*, the short sound nearly or perfectly of long *e*. Jones remarks on this peculiarity of Walker's orthoepy, that according to this scheme, *asperity* would be pronounced *asperetee*, which he declares to be *ludicrous*. This error in Walker's scheme extends to more words than any other, or than all others; it extends to the vowels *i* and *y* in more than *ten thousand words*. But neither in England, nor in the United States, are these vowels ever pronounced in this manner, unless when prolonged in music. Yet this erroneous notation is adopted in some Spelling Books in this country.

Walker, like other writers, divides diphthongs into *proper* and *improper*—proper, when the two vowels have two sounds, as in *feud*; improper, when they have but one sound, as in *aim*, *law*.—This division seems to be not very accurate. Sheridan denominates the union of two vowels with one sound, a *digraph*—double written; one vowel only being sounded, the other having no effect.

Walker makes a great mistake in saying that a consonant may be *doubled to the ear*. He says, that though the letter *r* in *florid* is not doubled to the eye, yet as the accent is on it, it is as effectually doubled to the ear, as if written *florrid*. It is strange that any man should have made such a mistake. So far is it from being true, that it is impossible to *double to the ear*, a consonant between two vowels; that is, it is impossible to utter more than one consonant between two vowels, without a pause between the consonants. In pronouncing *banner*, for example, the tongue is placed under the upper teeth but once; that is, there is but one articulation, or joining of the organs. If we would utter both letters, we must stop after uttering *ban*, withdraw the tongue from the upper teeth, then apply it a second time, to form the second articulation, or utter the second *n*. Write any number of consonants between two vowels, yet we pronounce but one. In uttering compounds, the case

is different, for in pronouncing *j* or *ch*, we change the position of the organs without an intervening vowel.

The principal classes of words in which Walker's pronunciation is condemned by other English orthoepists, are,

1. That in which *a* is followed by *s*, or *ss*.—Thus Walker gives the short sound of *a*, as in *man*, *hat*, in such words as *ask*, *mask*, *lass*, *pass*. This is done also by Sheridan, who extends it to *father* and other words; rejecting the Italian sound of *a* in every word in the language. This pronunciation is condemned by Jones and Perry. The writer knows from several months residence in England, that Walker is wrong. In almost every word of this class, educated men in England pronounce the Italian *a*.

2. The class of words in which *oo* are followed by a close consonant. In these Walker pronounces *oo* in *book*, *look*, *took*, as he does in *boot*, *booth*, *stool*, *boom*. This is condemned, and is certainly wrong.

3. In many words Walker pronounces *ch* as *sh*, contrary to good usage; as *bench*, *branch*, *trench*, pronounced *bensh*, *bransh*, *trensh*. This is wholly contrary to good usage, and condemned by other orthoepists.

4. Walker's notation of the sound of *i* and *y* short, making these vowels long, as in *glory*, *homily*, *vanity*, is condemned, and is certainly wrong in more than ten thousand words.

5. Walker's notation of the sound of *tu* in *natural*, *flatulent*, which he pronounces *natshural*, *flatshulent*, is condemned by Jameson, who calls it *intolerable*, and by Knowles, who denounces it as absolute *vulgarity*.

6. The conversion of *d* into *j* in *obedience*, *ingreient*, Jameson declares to be *intolerable*.

7. Walker's *beaucheous*, *bounceous*, *plenichus*, are condemned, and not followed by any persons, except dandies.

8. The change of *d* into *j* in *gradual*, *pendulous*, pronounced *gradjual*, *pendjulous*, is also condemned.

There are many other words whose pronunciation is condemned by other authors; but these will serve as examples, to prove that Walker's pronunciation is not received as a standard; and the writer has heard his book condemned by professors in the University.

The truth is, the higher classes of society in England are governed wholly by usage, and pay no regard to any book whatever; and the books on orthoepy differ so much from each other, that they furnish no standard.

But the mischief is, that Walker's Dictionary has been pushed into the market in this country, and his opponents have not been circulated here at all. Our people have been deceived.

Relying on the popularity of Walker's Dictionary, several persons have compiled elementary books upon his plan, and urged them upon the public, as offering standards of pronunciation. Upon this plan have been constructed the Spelling Books of Marshall, Cobb, Sears, Crandall, Bentley, Emerson, Bolles, and others in the Atlantic states, and Picket and Hunter in the West. Most of these retain the old orthography, as in *musick*, *publick*, *errour*, *horroure*, *splendour*, which has been long rejected by nearly every good writer, and by public authorities in both countries.

Such are the evils resulting from our confidence in English authors, and of a hasty departure from our former habits. The evils produced by Walker's Dictionary will not be cured in an age.

OBSERVER.

ELEMENTS OF METEOROLOGY.—BY M. POUILLET,
Professor of Natural Philosophy, in the faculty of sciences of the University of Paris, and in the Polytechnic School, &c., &c., &c.

CHAPTER I., SECTION 2.—(Continued.)

OF THE MOVEMENT OF HEAT ABOVE THE STRATUM OF INVARIABLE TEMPERATURE.

Between the surface of the earth and the depth of 60 or 80 feet, we have but few observations, and these have, in general, been made at trifling depths. The following are the results of experiments made at Zurich, Edinburgh and Strasburgh.

Mean results of the Observations made at Zurich, by M. Ott, and continued for four years and an half, commencing in 1762.

Mean temperature of Zurich,..... 47°84

do. do. warmest month,..... 65.66

do. do. coldest month,..... 26.70

Difference,..... 38.88

MONTHS.	DEPTHS OF THE THERMOMETERS.						
	1/4 foot.	1/2 foot.	1 foot.	2 feet.	3 feet.	4 feet.	6 feet.
January,.....	32°54	32°90	34°88	36°50	37°40	40°64	44°60
February,.....	30.92	32.36	34.70	36.14	37.04	39.92	41.90
March,.....	45.86	40.10	41.00	40.10	40.10	41.00	41.90
April,.....	53.06	47.84	47.84	46.58	46.58	44.96	44.96
May,.....	58.64	55.76	55.76	53.06	52.92	52.56	50.00
June,.....	66.92	60.98	60.98	59.00	56.84	55.76	53.06
July,.....	67.10	63.86	63.68	60.98	60.98	59.18	56.84
August,.....	64.04	62.96	61.88	60.98	61.34	60.98	59.36
September,.....	59.00	57.92	59.00	59.18	59.54	59.36	59.36
October,.....	51.08	50.72	51.08	50.90	53.06	53.60	56.12
November,.....	41.00	42.04	42.98	46.40	47.84	48.92	52.92
December,.....	35.96	35.60	36.86	39.20	41.00	44.96	48.92
Mean,.....	50.72	48.74	48.92	48.92	49.46	50.18	50.90

Mean Maxima and Minima.

Depth.	Maximum.	Minimum.	Difference.
1/4 foot,	67°10 July,	30°92 February,	36°18
1/2 do.	63.86 do.	32.36 do.	31.50
1 do.	63.68 do.	34.70 do.	28.98
2 do.	60.98 do.	36.14 do.	24.84
3 do.	61.34 Aug.	37.04 do.	24.30
4 do.	60.98 do.	39.92 do.	21.06
6 do.	59.36 do.	41.90 do.	17.46

Mean results of Observations made near Edinburgh, by Mr. Ferguson, during the years 1816 and 1817.

Mean temperature of Edinburgh,..... 47.84

do. do. warmest month,..... 59.36

do. do. coldest month,..... 38.30

Difference,..... 21.06

MONTHS.	1816.				1817.			
	1 foot.	2 feet.	4 feet.	8 feet.	1 foot.	2 feet.	4 feet.	8 feet.
January,.....	33°0	36°3	40°7	43°0	35°6	38°7	40°5	45°1
February,.....	33.7	36.0	39.0	42.0	37.0	40.0	41.6	42.7
March,.....	35.0	36.7	39.6	42.3	39.4	40.2	41.7	42.5
April,.....	39.7	38.4	41.4	43.8	45.0	42.4	42.6	42.6
May,.....	40.0	43.3	43.4	44.0	46.8	44.7	44.6	44.2
June,.....	51.6	50.0	47.1	45.8	51.1	49.4	47.6	47.8
July,.....	54.0	52.5	50.4	47.7	55.2	55.0	51.4	49.6
August,.....	50.0	52.5	50.6	49.4	53.4	53.9	52.0	50.0
September,.....	51.6	51.3	51.8	50.0	53.0	52.7	52.0	50.7
October,.....	47.0	49.3	49.7	49.6	45.7	49.4	49.4	49.8
November,.....	40.8	43.8	46.3	45.6	41.0	44.7	47.0	47.6
December,.....	35.7	40.0	43.0	46.0	35.9	40.8	44.9	46.4
Mean, ..	43.8	44.1	45.1	46.0	44.9	45.9	46.2	46.6

Maxima and Minima, 1816.

Depth.	Maximum.	Minimum.	Difference.
1 foot,	54°00 21 July,	33°08 1 Feb.	20°92
2 do.	53.06 24 do.	35.96 4 do.	17.10
4 do.	51.98 1 Aug.	39.02 11 do.	12.96
do.	50.00 14 Sep.	42.08 16 do.	7.92

1817.

Depth.	Maximum.	Minimum.	Difference.
1 foot,	55.94 5 July,	33.98 1 Jan.	21.96
2 do.	55.94 10 do.	37.94 do.	18.00
4 do.	51.98 August,	39.92 3 Feb.	12.06
8 do.	51.08 20 Sep.	42.44 11 Feb.	8.64

Mean results of Observations made at Strasburgh, by M. Herrenscheider, during the years 1821, '22 and '23, with a thermometer placed fifteen feet below the surface of the ground.

Mean temperature of Strasburgh,..... 49°46

do. do. warmest month,.... 62.60

do. do. coldest month,.... 28.40

Difference,..... 34.20

MONTHS.	1821	1822	1823
January,.....	44°93	48°04	43°81
February,.....	42.12	46.62	44.12
March,.....	45.63	47.18	45.23
April,.....	45.50	48.20	46.35
May,.....	46.33	49.73	48.87
June,.....	48.56	51.35	51.68
July,.....	49.43	52.25	51.12
August,.....	51.39	53.75	52.81
September,.....	52.28	53.93	52.25
October,.....	51.97	52.58	51.68
November,.....	50.85	50.00	48.87
December,.....	49.70	45.23	49.16
Mean,.....	48.22	49.90	48.82

In examining these results, and some others which we have not quoted, we are led to the following conclusions, which seem to apply to all the continents of the northern hemisphere.

1. That in the month of August, the temperature of the earth decreases almost uniformly, from the surface to the stratum of invariable temperature.

2. That during the month of September, the temperature is nearly uniform from the surface to the depth of 15 or 20 feet: below that, it decreases a little and slowly to the stratum of invariable temperature.

3. That during the months of October and November, the temperature increases from the surface to the depth of 15 or 20 feet: below that, it is nearly equal to that of the stratum of invariable temperature.

4. That during the months of December, January and February, the temperature increases nearly uniformly, from the surface to the stratum of invariable temperature.

5. That during the months of March and April, the temperature decreases very rapidly to the depth of one or two feet: below that, it decreases less rapidly, and at length increases.

6. That during the months of May, June and July, the temperature is still decreasing, but less rapidly, and to a greater depth: then it increases until it equals that of the stratum of invariable temperature.

Thus V. V. V. being the vertical of a place; if we suppose below the surface V. points P. Q. R. placed at different depths, and that the excess of temperature of these points, in the month of August, above the mean of the place, is represented by the lines P. A., Q. B. and R. C., the line formed by the union of the points A. B. C., will be nearly straight, and will not be inflected until it reaches a great depth: so the lines P. D., Q. E. and R. F., representing the decrease of temperature of the points P. Q. R. in the month of February, below the mean of the place, the line formed by the union of the points D. E. F., will be sensibly straight, and will not be inflected until it reaches a great depth. These two lines approach as the depth increases, and the distances D. A., E. B. and F. C., show how the oscillations of temperature diminish in proportion to the depth.

For example: at Zurich, the difference between the coldest and warmest month, which, at the surface, is 38°88, is no more than 27° at the depth of one foot below the surface, and 17°46 at the depth of six feet.

It should be remarked that, although Zurich and Edinburgh have the same mean temperature, yet the indications of thermometers buried in the ground, are very different at similar depths: this is doubtless owing to a great many causes, among which, should be placed in the first rank, the nature of the climate and of the soil. In excessive climates, the temperature below the surface, exhibits something of the same great inequalities it possesses above it, and the soil itself may modify this influence, by its power of conduction, and particularly by the greater or less facility with which water filtrates through it.

A few years, however, will give us more precise data for the discussion of these important problems: since at many places in France and Germany, series of experiments have been instituted, with thermometers buried at increasing depths. M. Arago has placed them, in the gardens of the observatory of Paris, as low as 25 feet: these thermometers are necessarily alcoholic, on account of the pressure: the bulbs are cylindrical and of very large dimensions: the tube is very fine until it emerges from the ground: and then it is enlarged

so as to facilitate the observation of it: the hundredths of a degree may be easily appreciated.

The ground in its superficial layers, from a few lines to the depth of an inch, has always a temperature very different from that of the air. Its chemical composition, state of aggregation, powers of conduction, and radiation, humidity or dryness, are so many causes which modify the degree of heat or cold, which it acquires during the day or night. These causes are so numerous and so variable, that it is difficult to analyze or even study their effects by experiment, in order to subject them to general laws. But it may be said that, commonly, the surface of the ground assumes during the day a temperature much higher than that of the air, and during the night one much lower. At Paris, it is not uncommon to find the ground at 122° during the heat of summer, and in 1824, I found it in a garden 149°; it happens also very frequently, that during the night, it falls 14 or 18° below the temperature of the air: and in the fine days of winter, still greater differences may be observed.

OF THE TEMPERATURE AT GREAT DEPTHS.

It was long ago observed that, in deep mines a sensible increase of heat was felt; but in those days, much more interest was felt in explaining than in observing facts. The cause of this subterranean heat was, therefore, attempted to be explained, before its existence was verified in a precise manner, and in very different ways; some, as Boyle, attributed it to the decomposition of pyrites, or rather to those kinds of fermentation which were so frequently resorted to for the explanation of embarrassing facts; others considered it a confirmation or consequence of the celebrated theory of a *central fire*, which had been invented in the earliest ages, and in turn adopted and rejected by philosophers and naturalists. But when the spirit of doubt and examination succeeded to the spirit of system—when truth was sought by means of experiment instead of logical subtleties—it was seen that the existence or non existence of subterranean heat was one of the grandest problems that physics could encounter, and that to resolve it, thermometrical observation would be more effectual than the most eloquent dissertations. Gensanne appears to have been the first who observed the thermometer at depths gradually increasing, and who discovered the important fact, *that the temperature increases with the depth*. His experiments were made in the year 1740, in the lead mines of Giromagny, three leagues from Befort. The following are the results given by him:—

Depth,	331.28 feet,	54°5
do.	675.68 do.	55.53
do.	1010.24 do.	66.20
do.	1420.24 do.	72.86

In 1785, Saussure made analogous experiments in the Canton of Berne. A Saxon gentleman, who had formed a theory on the subject of salt springs, had some years previously induced the Republic of Berne to sink a shaft to a very great depth, affirming that the result would afford a confirmation of his theory. The shaft was in fact sunk to a depth of more than 700 feet, with lateral galleries, but as no salt appeared, either in mass or solution, the work was abandoned, the Republic not desiring to continue the experiment. In these galleries, Saussure found the following temperatures:—

At the depth of 354.24 feet,	57°92
do. 600.24 do.	60.08
do. 721.60 do.	63.32

In 1791, Humboldt also made numerous experiments in the mines of Freyberg, with M. Friesleben. In 1802, Daubuisson gave a new aspect to this important problem, and since that period, observations have been multiplied in the principal mines of Europe, in France, Germany and England, whilst Humboldt, having commenced his memorable voyage in 1798, examined the temperature of the mines of America to the depth of 1212.16 feet.

In 1827, M. Cordier published a valuable memoir on the temperature of the earth, in which he combined his own researches with those that had been made previously, and we borrow from him the following table, containing the most important results hitherto obtained.

TABLE OF TEMPERATURES OBSERVED AT DIFFERENT DEPTHS.

PLACES, NAMES OF OBSERVERS AND DATES.	Depth of stations.	Temperature.		
		Station.	Mean of country.	Depth corresponding to 1° of increase.
<i>In the Drainage Wells of Mines.</i>				
Cornwall, W. Fox, published in 1822.				
Copper mine of South Huel town.....	269.	60°	50°	26.9
Copper and tin mine at Huel, Unity wood.....	516.4	64.	50.	36.4
do. of Poldice.....	864.5	78.	50.	30.8
		80.		28.9

<i>Devenshire, W. Fox, published in 1822.</i>				
Copper mine of Gwennap.....	900.6	75.7	50.	34.5
do. East Liscomb.....	492.1	80.	50.	29.9
Lead mine of Beeralston.....	492.1	64.	50.	35.1
Mine of Huel Friendship.....	720.5	66.5	50.	43.6
Switzerland, Saussure, spring of 1785.	1020.7	61.4	50.	70.0
<i>Salt mines of Bex.....</i>				
Brittany, Daubuisson, 5th Sept. 1806.	721.8	63.3	43.2	45.6
Lead and silver mine of Poullaouen.....	465.9	57.5	52.7	95.8
<i>In the Springs of Mines.</i>	492.1	56.3	51.7	136.8
<i>Saxony, Daubuisson, end of winter of 1802.</i>				
Lead and silver mines of Jungbohe-Birke.....	255.9	48.9	46.4	101.5
Lead and silver mine.....	711.9	54.5	46.4	87.5
do. do. Beschertgluck.....	839.9	56.8	46.4	80.3
do. do. Himmelfahrt.....	734.9	57.9	46.4	63.6
Brittany, Daubuisson, Sept. 5, 1806.	127.9	53.4	52.7	177.5
Lead and silver mine of Poullaouen.....	246.	53.4	do	341.5
	459.3	58.1	do	32.3
	199.8	53.6	51.8	90.8
Lead and silver mine of Huelgoet.....	262.4	59.	do	96.4
	393.7	59.	do	43.2
	754.6	67.4	do	47.2
	1440.3	82.	50.	44.9
<i>Cornwall, W. Fox, published in 1821.</i>				
Copper mine of Dalcoath.....	1712.6	78.5	60.8	45.2
<i>Mexico, Humboldt.</i>				
Silver mine of Guanajuato.....				
<i>In the Water of great inundations.</i>				
<i>Cornwall, W. Fox, published in 1822.</i>				
Copper mine of North Huelvirgin, (water very deep).....	234.3	60.1	50.	23.2
do. do. Nangiles, (very deep)	528.2	57.7	50.	66.7
do. do. Gwinap, (water 420 feet deep)....	600.4	60.1	50.	142.9
do. do. Tingtang, (water nearly drawn off, 59 feet deep).....	643.8	63.5	50.	47.6
do. do. Huelmaid, (water drawing off, 180 feet deep)	750.6	60.1	50.	75.1
Copper and tin mine of Tincroft, (water drawing off, 59 feet deep).....	756.6	63.	50.	58.3
Tin mine of United mines, (water 180 ft. deep).	1080.8	74.1	50.	36.5
<i>Saxony, Daubuisson, end of winter of 1802.</i>				
Lead and silver mine of Jungbohe-Birke, (water 229 feet deep).....	1044.	63.	46.4	62.5
Brittany, Daubuisson, 1806.				
Lead and silver mine of Huelgoet, (water 52 ft.)	780.9	65.8	51.8	78.9
<i>In the Rock of Mines.</i>				
Saxony, De Trebra, 1805, '6, '7.	590.6	52.2	46.4	67.6
Lead and silver mine of Beschertgluck.....	853.1	59.	do	56.5
	235.9	47.	do	171.4
	551.	55.	do	63.8
1815.—Lead and silver mines of Alte-Hoffnung-Gotes	880.	59.	do	69.9
	1245.	65.7	do	64.3
<i>Cornwall, W. Fox, 1821.</i>				
Copper mine, called United Mines.....	1141.8	87.4	50.	30.4
1822.—Copper mine of Dalcoath.....	1200.8	88.	do	30.3
	1380.7	75.6	do	56.7
<i>In the Water and Rock of three Coal Mines.</i>				
<i>M. Cordier, 1827.—Carneaux.</i>				
Water of the Veriac Well.....	20.34	55.	51.8	
Water of the Bigorre Well.....	37.72	55.6	do	
Rock Bottom of mine of Ravin.....	596.81	62.7	do	
Rock Bottom of mine of Castellan	629.95	67.1	do	
Lyttry, rock bottom of mine.....	324.72	61.23	do	
Decise, water of well at Pelisson.....	28.87	52.5		
water of well at Pavillon.....	57.45	53.1		
rock at the bottom of { Upper station,	351.07	63.1		
the main Jacob, { Lower do.	561.05	71.78		
In a well dug at Rochelle, M. De Bellevue.				
In the Jura limestone near the Sea.....	344.40	61.25	53.06	

From these results, the following conclusions are fairly deducible:—

1. Below the stratum of invariable temperature, where all the oscillations of the thermometer at the surface, entirely cease, after a gradual diminution; the temperature remains uniform at every depth, without experiencing any change in the course of years.

This conclusion is verified by all the observations that have been made at the same place at different epochs, and by the observations made in some mines of Saxony for a series of years, with all the necessary precautions.—(Ann. de Phys. et de Chim. T. xiii. p. 211.)

2. In every place where observations have been made below the stratum of invariable temperature, it has been found without a single exception, that the temperature increases with the depth.

We cannot consider as an exception the temperature of 50°8 which Gue-tard obtained in 1762, in the salt mines of Velizka, at the depth of 328 feet, and also at that of 557.6 feet, because his observations were not made with sufficient care.

3. If we attempt to express the law according to which the temperature increases with the depth, we shall find different results for different localities.

For example, it is ascertained, that to obtain an increase of 1° of temperature, we must descend—

In France, at Decise, about..... 27 feet,

Littry, " 35 do.

the Observatory of Paris,..... 51 do.

Carneaux, 64 do.

Brittany, 72 do.

In Switzerland, near Bex, about 47 feet.

In Saxony, for the mean of different mines, about 72 feet.

In England, in Cornwall and Devonshire, about 45 feet.

In America, at Guanaxato, about 45 feet.

Thus, in general, we may say approximatively, that to obtain an increase of 1° in temperature, we must descend from 45 to 54 feet below the surface: but the irregularities that are observed above or below this sort of mean, are not in the least surprising, when we consider all the causes which may contribute to modify the distribution of heat among the different strata which form the crust of the globe. (To be continued.)

LECTURES ON COMPARATIVE ANATOMY AND ANIMAL PHYSIOLOGY,

BY ROBERT E. GRANT, M. D., F. R. S. E., &c;
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LECTURE V.—(Continued.)

ON THE ORGANS OF SUPPORT OF POLYPIEROUS ANIMALS.

Now there is a point of some importance on account of the difference of opinion that prevails upon it, even at the present moment, amongst eminent writers; I allude to the connexion existing between the polypi and the skeleton. Some are of opinion that these corals are bodies exuded by numerous separate and detached beings, while others believe that these, like trees, are so many different branches of one individual. Some think of our own bodies, that our soft parts are all composed of different living atoms. It is not the general opinion, however, that every globule of our own body is a distinct and independent being, however it might have been a separate being before it came to form this aggregate; but that is not the subject of dispute. These animals being thoroughly examined, then, you will come to the conclusion that the coral which I now show you, is as much a single skeleton of one fleshy body, as is the skeleton of our own body, or of the higher animals.

Perhaps it would be best to ascertain this by watching the formation and growth from the embryo state. If the polypus was first formed, and secreted for itself a skeleton,—if that polypus produced another polypus, which happened to stick near to the former, and to build up another skeleton,—then if that again generated another polypus, which went out and constructed another skeleton—if this were the case, then indeed would these be extraordinary aggregates of independent beings, and then it would be an interesting inquiry as to how it is that minute beings of this independent and isolated description, without eyes, or any organs of sense, or any nervous filament in their body, come to construct a substance with such perfect symmetry as you now see;—how the little polypus at the bottom knew how to apportion its work with the polypi that were working at the almost invisible filaments which you observe in this gorgonia at the other remote extremities. *A priori*, the probability is greater that they form parts of one whole.

Upon taking one of these reproductive gemmules contained in the vesicles of the *flustra carbesia*, and of the *plumularia falcata*, and watching the production of the skeleton from that gemmule, I have found that the skeleton begins to form before a polypus is in existence. What I now show you is a magnified view of the specimen of *plumularia falcata*. Hand it round the class. This is the vesicle; the gemmule has not yet appeared, but I shall have to examine these more particularly hereafter. In this specimen these reproductive gelatinous substances, the reproductive gemmules, have come to maturity, and are now escaped. Here are the gemmules swimming about by vibrating their cilia. Now it is interesting to watch the result of these gemmules swimming about in the sea by a rapid action of the hair-like processes which surround them. In this specimen, beginning to be developed, as yet there is no ramification—no plant-like appearance. Here it is fixed, and beginning to spread upon the surface of a watch-glass, so that

by the use of the microscope you can see, atom by atom, the changes that are produced in the progress of the growth. Here again, when farther advanced, there is the fleshy substance accumulating upon certain parts which at first are transparent, and a thin homogeneous substance is beginning to form the skeleton in the interstices. As yet it is exceedingly minute, soft, and gelatinous; but in the progress of its growth, the soft, thin, homogeneous substance of the exterior becomes more dense, embracing the first-formed parts of the fleshy substance, indeed all parts, and the whole jelly, with its thin covering, and continues to advance and to radiate. Then we observe a stem beginning to rise from the centre of these radii of roots, which are, in fact, the first-formed parts that the little round gemmule shoots out. So that the gemmule is become, not a polypus but a root. It begins then to rise from the centre of the roots, and at length to divide; so it will at length form on its branches a cell, at the bottom of which cell will gradually be developed a polypus. The polypus then is not the being that was first formed, and which, after its formation, produced the skeleton; yet you will find how very prevailing the opinion is, that the polypi are the first-formed parts of zoophytes, and that they secrete or somehow form for themselves the enveloping cells and the whole structure of the skeleton.

So much then upon that point. I think we have not leisure in this anatomical part of the course to enter into what relates to the zoological description of the myriads of forms belonging to this group, but what I have mentioned will give you an idea of the form and growth of the external horny tubular skeletons in the various species of flexible zoophytes so common on the British coast.

The horny skeleton also is frequently internal, and that produces a skeleton of a very different kind. These sertulariæ, &c., which I show you, brought from the coast of Sheppy, have all their skeletons at their outer surface; they are so many horny ramifying tubes enclosing the fleshy substance. Many other specimens of the same kind you have before you. In many of these animals, however, the skeleton which is of a horny consistence, is placed in the interior of the fleshy substance. This is the case with the *gorgonia*, which I hold in my hand. It is the case with these antipathes, from which all the very soft fleshy substance, and every trace of it in these specimens, has disappeared. In the *gorgonia*, however, we have a more intelligible and more common example, more easily understood in commencing the study of the internal horny skeletons of zoophytes. Here you will observe, that it still presents very much the appearance of a plant with the simple expanded base of attachment, like that of many marine plants. The base of attachment of marine plants is not the organ by which nutrition is imbibed, or by which the functions of life are performed. You will see fuci, (as the *fucus filum*) twenty feet in length, with only a small cup-like attachment to some rock, but that cup-like part is merely the organ of attachment, as it is in zoophytes. Now this horny axis of the *gorgonia* is surrounded, in the living state, with an irritable flesh, which fleshy substance covers every part of the horny texture, from the extremities of the root to the extreme points of the most delicate ramifications at the other end. This fleshy substance develops itself, at innumerable points, into the little cup-like appearances we have already seen termed the polypi. So that if the whole fleshy substance were removed from the branches, you would have no trace of cells left on their surface, for the fleshy substance thus removed is that which contained the polypi. This horny substance is deposited layer after layer by the enveloping fleshy crust, so that the first part deposited undergoes no change in after life. Upon making a section of the antipathes or *gorgonia*, you can perceive the concentric layers in which the horny substance has been exuded during the life of the animal. The fleshy crust which I now show you, was cut off from the living zoophyte by Cavolini in the Bay of Naples. He took it out into the Bay, and sunk it in perforated earthen vessels in a grotto at some distance out from the shore, for the purpose of watching what was to take place. By observation he found that this fleshy crust exuded for itself, after being carefully peeled off, a new central horny axis, but that when the axis had been thus deprived of its fleshy crust, it did not exude a new fleshy substance on its surface. There is no internal organization in the hor-

ny axis; it is as dead and extravascular in this part of it, as the rock upon which it is found growing, or as the solid corals and shells of other invertebrated animals.

This fleshy substance has all disappeared from this dried *gorgonia*, so far as evaporation could cause it to disappear, and yet you will observe that the whole nearly of the horny axis is covered with a crust of a beautiful colour, sometimes of a deep red, sometimes of a crimson, sometimes of a bright yellow; and altogether presenting in the different species a great variety of beautiful hues. These colours are dependent upon some peculiar colouring animal matter that was contained in the substance of the fleshy crust itself, and has nothing to do with the horny axis, which is brownish black. The horny axis appears of a black colour, but when cut into small portions, it has that brown appearance which presents itself in slices of most condensed glutinous or horny substances.

When we have cut into the fleshy crust, we find it is permeated in all its parts by calcareous spiculae. Now it is a curious circumstance this, because you will observe that the animals we were describing yesterday, (the porifera,) had nothing for their skeleton but spiculae, and that a great division of those had only calcareous skeletons, composed, in this way, of calcareous spiculae; such was the case with the group called leuconida. Here, then, we have calcareous spiculae, not forming the entire central axis, but which have not yet disappeared. They still exist in the fleshy substance, but where did they exist in the animals we were considering yesterday? In them all parts of the fleshy body develop the spiculae. We found them depositing everywhere in their interior, spiculae. That was the case with all the animals we were speaking of yesterday, whether horny, calcareous, or siliceous, and which had not yet been able to form a solid internal continuous axis. If the distinct dried crust which you now see covering this horny axis of the *gorgonia*, or the *isis*, were examined minutely in the living state, you would find that all this coloured calcareous dried crust is perforated by myriads of minute orifices. These minute orifices, still preserved in the dried specimens, are the remnants of the cells of the fleshy substance from which the polypi shoot out in the living state. It is, therefore, impossible to find cells on looking at the internal concealed horny axis, when you have removed the fleshy irritable crust which always forms both the cells and their contained polypi.

You look now upon the skeleton of the antipathes. In the antipathes the fleshy substance which envelops and forms the skeleton is soft and gelatinous, inasmuch, that when it is brought from the depths of the sea—torn from the rocks to which it adheres—that substance runs off almost entirely, so that we never see a crust of it in the dried specimens of antipathes brought to Europe. In these specimens all has run off, and the axis, thus cleaned, presents a smooth and glistening surface, but when we examine that axis chemically or otherwise, we find it the same as in the *gorgonia*. Zoologists, however, attend to the circumstance that the *gorgonia* has on its surface a longitudinally striated appearance, while antipathes is smooth; but these are differences that we cannot enter much into at present, as they belong more to another part of the course, which treats of the history of species. This, however, will give you some general idea of the internal structure and nature of the horny, unorganised, internal axis, which is found in many of the largest forms of the horny zoophytes, or *keratophytes*.

Now with regard to the calcareous skeletons of zoophytes, we find these presenting a greater variety of forms than either the external or the internal horny species. In some the calcareous skeleton is placed completely in the interior of the fleshy substance, as in the pennatula; most frequently, however, it is found exposed on some part of the surface, exuded from below from the side, or in various directions. In the animals denominated pennatula and virgularia which are now before you, you have examples of calcareous substances placed completely within the fleshy substance of the body. The pennatula is an animal formed somewhat like a pen, with its quill and its barbs, and which has the fleshy substance covering the whole exterior of the body. Along the central part there is a thin calcareous solid cylindrical body, tapering at each extremity, where it is soft and flexible, but dense and thicker in the middle. This calcareous axis re-

quires to be soft and flexible at the two extremities, because of the contractile power of the whole animal. If it were not formed in this way, it would force the ends of its axis through the body. It is curious, that in the virgularia the solid cylindrical axis does extend beyond the extremity, at the lower part of the body. You may lay it down as a general principle applicable to all forms of skeletons of the zoophytes and poriferous animals, that whether they be made of silica or carbonate of lime, or carbonate and phosphate of lime, for there is a little of the phosphate according to the researches of Hatcher in all these calcareous corals before you, or whether they be formed of horny substance, their materials were formed solely by the fleshy substance, and these exude from or into the body, in the unorganised condition of all invertebrate skeletons. If you were not aware of this being the general law, you might be perplexed to account for the growth of this axis of the virgularia, which was originally formed entirely within the fleshy covering, and is now seen extending much beyond the extremity of the fleshy substance. In fact, the animal, from all we know of its living habits, stands upright, with this exposed projecting part stuck into the mud at the bottom of the sea. That is the position in which mariners generally collect them near Inch Keith in the Firth of Forth, and this is further shown to be its natural position, from the growth of foreign bodies on the exposed and fixed part of the stem.

On the lower surface of the pennatula we find numerous calcareous apiculae directed from the stem, which serve the animal, in its progressive motion, to creep slowly over the bottom of the sea. The central axis of which I was speaking, both in the pennatula and virgularia, is a solid calcareous mass, cylindrical, containing a large quantity of animal matter, particularly at the extremities, where, in the former genus, it is exceedingly flexible and slender, and it is composed of concentric layers. The same structure is found also in the umbellularia. By far the greater number, however, of the calcareous skeletons of zoophytes are exuded from the outer surface of the body, so as to be more prominent than the living flesh. Generally, the fleshy part of the animal, as in this *fungia agariciformis*, is upon the upper part; sometimes it embraces the whole, when it is branched, as in this large madrepora. You will observe, however, that if there be a point of the skeleton which is not surrounded by the living flesh, that point, which is the base of attachment, may be almost united to the rock upon which it rests, and identified with it, if it rests upon any solid rock, as on carbonate of lime. The transition may be almost imperceptible from the skeleton of the living being to the rock on which it rests, for both are equally unorganized bodies. Now, then, I can fancy a transition from the internal to the external skeletons, by supposing that a virgularia were cut open, and allowed, thus opened and spread out, to go on. In place of its skeleton being in the centre, it will exude below its fleshy substance a calcareous spreading mass, like a *fungia limacina*. Well, then, the fleshy substance is the animal, in the zoophyte; and this large mass of meandrina, upon which my hand rests, forms thus, from an early period of the development of its gemmule; it is called the *meandrina cerebri-formis*, and is somewhat like the convolutions of the human brain on its surface.

In this meandrina, the form was precisely the same, though not the bulk, from an early period of its life. It had this globular appearance, this beautiful meandering surface, and all these delicate laminae that run transversely through the meandering grooves, from a very early period. Upon looking down on the surface of these meandrinae, however, you can distinctly perceive that these depressions extend but a very short way into the mass. No capillary or absorbent, or other vessel, penetrates the solid mass, to remove the old layers, and to build up the new. Upon breaking the mass, however, and watching the direction taken by the more solid parts projecting from the surface-like ridges, you can see that they extend to the very central nucleus of the base; that it begins to build this skeleton at the commencement of its development, precisely upon the plan which is observed in the construction throughout life, covering over the whole round surface with a fleshy secreting substance. If you cut away the fleshy substance, there is necessarily an end of all growth at the denuded part, and any part that may thus remain de-

nuded, will gradually be affected by the tide, or by the action of the waves; and the rubbing of the sands, gravel, &c., will wear it to fragments, as you observe here on some places, and the rest, that remains covered by the fleshy substance, will continue to grow in the usual form, or the fleshy substance will gradually spread and cover the wound.

We see, upon examining the fractured portions, how it has been gradually kept in the same precise plan, without the fleshy substance permeating the whole cellular interior of the mass. The fleshy substance which covered the exterior of the body in all these meandrinae, and similar calcareous zoophytes, developed polypi. Although those polypi are not necessary to the growth of the zoophytes in the embryo condition, by their seizing living prey, they are additional organs by which the animal acquires support during its more perfect state of development, just like the leaves of a developed plant. Those polypi are destined to seize the minutest animals, which are floating in myriads in every part of the sea. The polypi, which are sometimes deciduous, as in flustra, enable them to grow more rapidly, and to extend more quickly their dimensions. The pavoniae are covered in the same way with fleshy substance, which can shrink, as in all similar structures, between the plates, that fleshy substance developing also, as usual, the polypi. In many you see, consequently, no cell left in the hard skeleton for the polypus to shrink into—this is the same case as with the meandrina; but in others, as in this caryophyllia, you will observe that the solid axis, composed partly of the phosphate, but principally of the carbonate, of lime, as shown by the experiments of Hatcher—(and I am sorry to say that since his time very little appears to have been ascertained upon this part of the subject)—you will observe that this ramified solid mass has developed itself, at various points, into large distinct cells; which cells served for the protection of the polypi, as the smaller cells of astreae, madreporae, porites, &c.

You will perhaps be surprised to find, in a living animal, that its base is thus dead, and denuded of its fleshy covering, and that it is alive still at its upper part. But if you reflect that the point of attachment in these calcareous masses is always uncovered by the living fleshy substance,—that it is fixed to the rock—that the extravascular calcareous matter has been exuded into the interstices of the rock and taken a firm hold of it—that all the rest is covered by the fleshy substance, and that it may shrink, may retire from the calcareous mass, or the skeleton may shut up in various directions that fleshy substance, then your astonishment ceases. Here, then, in this large caryophyllia there was obviously no fleshy substance at the base; at the time it was taken from the sea, it terminated near to the base; and here are millepores astreae, and other animals, which have collected around and grown upon the dead portion of the stem, but you distinctly observe the cells on the parts above this, which were covered with flesh.

Where you observe no cells on the solid skeleton, as in the coral, and the isis, you will understand that that is in consequence of the cells for the polypi having been entirely contained in the fleshy substance, which, in drying the specimen, is removed from the solid body. In the enplanaria, where the calcareous mass is expanded in the form of plates, you will very generally find the cells spread over one surface, which, in the natural position, is generally the lower, and deficient on the opposite. Nothing could equal the beauty of these animals in the living state. To witness in a pool of clear seawater, or on ridges of rock in the open and transparent sea, the beautiful little polypi projecting from the surface of this mass, with their little arms extended in all directions, creating rapid currents towards their mouths by vibrating their cilia, and thus bringing animalcules like bee-hives around them, and then shrinking, after they have seized their prey, each into its cell, as I have attempted to represent in these drawings, must be a spectacle indeed gratifying in the extreme to every beholder sensible of the beauties of animated nature. In one of these drawings, one of the polypi is represented as busy in getting itself expanded out; another is busy in creating the rapid currents, and anxious to obtain its animalcules, bending itself in every direction. Here is one that has seized an animalcule, and has shrunk into its cell. Here is one supposed to be irritated, having an animalcule in its stomach, and shrunk to the bottom of its cell; but these po-

lypi are all continuous with, and only developed parts of, the fleshy substance.

In the madreporae the cells are extremely numerous and small over the whole surface of the branches, and present the beautiful appearance which they do, from their laminated parietes being extended outwardly. They have a beautiful laminated structure around the margin of each orifice, which you can scarcely see without a magnifying power. Indeed, all the lowest tribes of animals have forms so delicate, that the most powerful glass will not extend to their minutest parts; and I may say of the lowest of them, that there is no living object constructed by the Author of nature which will not stand the utmost powers of human scrutiny, without diminishing our admiration of the beauty of its structure.

Here is a form which I exhibit only to give you a further illustration of the same principles. No doubt you are all familiar with these common fungi of the zoologists. This is the *fungia agariciformis*. This animal, fixed at the bottom of the sea, was covered in the living state with a fleshy substance; that fleshy substance was transparent, like the mantle of a Medusa, it was divided below into laminae, which shrunk into the numerous radiating interstices of this calcareous laminated mass. In the central part you will perceive a depression. The fleshy substance of the body at this part shot up into the form of a large polypus; and in this large round fungia there was but one polypus. Here is another, *fungia limacina*, long and convex like a snail. Here in place of one central depression, you will perceive a middle longitudinal groove, extending to nearly the extremities. In the central part of this species, as in the first, there was a large central polypus like an actinia. Along its sides were developed two or three more in the middle groove; and they became less and less perfectly developed as they got towards the two extremities; the whole, however, was covered with this fleshy substance, except the rough papillated base of attachment. The red coral, which forms so beautiful and valuable an article in an ornamental point of view, presents no cells on the surface, and is very solid within. The fleshy substance covered all the exterior, as in the antipathes (which is the common black coral,) as in the gorgonia, and many other horny species. Here the red colour of the coral has been owing, perhaps, to the presence of some peculiar animal matter, as it is driven off, and all corals are made white, by burning; but I am not aware that the colouring matter of the red corals has been chemically further examined. In the larger deep red masses you can perceive the striated surface, as in gorgonia, where it was covered, over the whole surface, by a living fleshy crust. The interior of this red coral is so dense and compact that it is susceptible of a fine polish, and is cut into various ornamented articles. It forms a valuable article of commerce, and is collected by dredges in different parts of the Mediterranean and the eastern seas. It contains phosphate along with the carbonate of lime. Besides the white, red, and black corals, some of these skeletons have naturally a yellow colour, as this virgularia; and some are blue, as this *pocillopora carulea*. You perceive on breaking this pocillopora that it presents internally a beautiful deep azure blue colour. You might suppose that to be the result of some putrefaction, but it is not so; it is the natural colour of this beautiful production in its living state. Here is the *tubipora musica*, again, of a beautiful deep blood-red, approaching to a purple colour, composed of tubes, which you know to be the protecting places of the polypi. In all these tubes the polypi are found, and have been accurately described by two eminent French writers, Quoy and Gaimard, who have examined them alive in the tropical seas. Nothing can exceed the beauty of these animals in their living state, where the green colour of the polypi contrasts with the deep-red of the tubes.

The last form which I shall detain you with is that of the *isis hyppuris*. In this isis you perceive an extraordinary example of an internal articulated skeleton, composed of solid calcareous portions, a description of which you would almost apply to the human skeleton. The whole of this jointed isis was covered originally with a fleshy irritable substance of great thickness. The great thickness of the fleshy substance which covered the whole surface of the skeleton, and which developed polypi and their soft clels at various points, you will judge

of from these magnified views, given by Ellis and by Goldfuss.

Here, then, is a skeleton of a zoophyte, raised high in the scale, with complicated polypi, and with a large and irritable fleshy body, presenting a completely internal jointed calcareous skeleton, yet extravascular, and as inorganic as the rock upon which this substance grew in the living state. Not a single capillary vessel penetrates or enters into it. It is deposited layer after layer on its solid joints, as on the solid joints of crinoidea and echinida, or like the shell of a molluscous animal, and even the horny joints grow in that way, the exterior surface being entirely covered with animated flesh, which produces polypi, having eight tentacula.

Now you have already seen, that skeletons of zoophytes are composed sometimes of horny substances, and sometimes of calcareous, but here, in the *isis*, these substances are placed alternately on the branches. Upon making a section of the horny substance, which you perceive like ligaments connecting the calcareous joints, you will find it also is composed of concentric layers, like the solid parts of the skeleton, and that the whole of this grows in the same way as the external skeletons of other species, by deposition, layer after layer, of the cartilaginous substance.

We have seen that the tubular external horny skeleton of the plumularia and similar zoophytes, is gradually developed from the gemmule by the exudation on its surface of a thin homogeneous fluid substance, which soon hardens, and which does not change its dimensions after becoming once hardened. This glutinous substance is, consequently, only a thin soft film over the free terminations of all the roots and branches of the growing animal, and is thus easily pushed forward, or made to assume any form, by the expanding internal fleshy matter as it advances in every direction to complete the adult form of the animal. The vesicles for containing the gemmules seem also to be annually pushed out from soft points of the branches, or from joints, which so generally divide the branches of these flexible tubular species. The operculum of the vesicle which drops off to allow the mature gemmules to escape, may be considered as only a thickened portion of the vesicle, and formed in the same manner. The figures which I place before you are highly magnified views of what I have observed of the development and falling-off of the vesicles of the *plumularia falcata*. In the one you will observe there is yet nothing but a thin gelatinous matter, and the parietes of the vesicle are still soft and expanding. In the second, the two gemmules attached to their umbilical chords, are developing, and shooting upwards from the fleshy substance which fills every portion of the interior of the whole ramified skeleton. The third figure represents the condition of the vesicle and its contained gemmules, which lost their umbilical attachment to the parent animal at the time when the operculum loosened and fell off. And the last view represents the dropping off of the whole vesicle of this plumularia, when its source of nutrition is cut off, and when the mature gemmules have escaped from its open cavity, and are swimming about by the rapid vibration of their cilia, in search of a suitable place to fix themselves upon for future growth. When the gemmule has fixed, it first forms a root, then a stem, then branches and cells, and at length polypi, as I mentioned to you before.

Those cellular, calcareous, ramified, and foliaceous zoophytes, forming the various *flustra*, and *eschara*, and *cellaria*, and *retepora*, and *cellepora*, have the hard parts almost entirely embedded in the fleshy substance, and all around their free and growing margins they are thin, transparent, soft, and gelatinous. The cells are formed of their full dimensions at first, as in other calcareous and more solid zoophytes, and do not enlarge after they are once formed, but only strengthen and consolidate their walls. In these, as in other forms of this class, the polypus never produces its cell, but the cell when nearly completed, begins to develop a polypus at its proximate extremity. This I have carefully watched during the development of the gemmules of *flustra*, and the magnified figures before you represent the appearances I have observed during the development of a cell from the gemmule of a *flustra carbesia*. The yellow, ovoid gelatinous gemmule contains at first no perceptible calcareous particle, and swims freely through the water by the action of the little vibratile cilia which cover its surface. When it fixes on a watch-glass,

and begins to spread, a flat expanded film of transparent jelly, it secretes opaque white particles of calcareous matter which form the outline of an entire cell. The walls of the cell become more defined and stronger, and minute spiculae begin to shoot inwards from their margin. The rudiment of a polypus appears at the bottom of the cell which has yet no orifice. The membrane enveloping the embryo polypus rises tapering upwards to near the upper end of the cell, and an orifice is formed to allow the young polypus to feel the influence of the surrounding element.

The aperture, and all the delicate structure of the cell completed, and the polypus having its twenty-two tentacula, and their cilia formed, and the muscular filaments which connect it with the orifice and the base of the cell, sufficiently developed, we find this singularly complicated organ (the polypus) busied in search of prey, and respiring, by means of its cilia, the medium in which it lives. Before this period of the development of the gemmule, however, we observe the margin of the first-formed cell radiating outwards in different directions to form parts of surrounding cells. The transparent gelatinous margin of the gemmule continues always to extend beyond the extreme visible terminations of these radiating calcareous lines which form parts of new and commencing cells. Soon after the polypus is sufficiently developed to extend from the cell in quest of prey, we observe its caecal appendix projecting from the left side of its alimentary canal, perhaps the first rudiment of a liver in the animal kingdom.

Such appears to be the general mode of development of the fleshy substance, and of the skeleton, before the first appearance of the polypi in the animals of this vast and interesting class; and their plant-like skeletons, however massive or ramified, are as much the organs of support of one individual being, as the shell of a gasteropod, or the skeleton of the human body. We pass by beautiful gradations, from the horny *porifera* through the soft *alcynonia*, where the pores are developed into polypi, through the various flexible and solid zoophytes, to the complex corticiferous species, as the *isis*, which lead us to the fixed ramified and jointed family of crinoidea among the echinodermata. The *caryophyllia* and *oculina* lead to the *actinia*, and the massive fungiae to the delicate *porpita* and *velella* among the aculeata. Many zoophytes, as the hydra and zoanthus, are entirely destitute of a skeleton, by which they have greater flexibility, more extensive motion, and more numerous impressions from surrounding objects. Where the ramifications of the skeletons are numerous, long, and delicate, and exposed to the incessant agitations of the sea, it is obvious that to withstand the shocks they must be flexible or yielding, either by having a large proportion of animal matter, as in the ramified calcareous leaves of *flustra* and *cellaria*, or by being composed of a horny flexible substance, as in *serpularia* and *gorgonia*, or by having their solid parts divided into numerous moveable joints as in the *isis*. Where the branches, however, are short, or the skeleton is sessile, and the polypi are organised for larger prey, the solid support cannot be too strong and unyielding, and hence the massive forms of *madrepores*, *meandrina*, *astrea*, *caryophyllia*, and all the larger lithophytes. But although we can perceive how beautifully all this is arranged, we cannot discover any peculiarity in the fleshy crust of the *coral*, by which it is adapted to secrete its elegant purple ramifications of solid lime, while the fleshy crust of the *gorgonia* and *antipathes* secretes an elastic horny axis; nor can we discover by what peculiarity of structure the thick fleshy crust of the *isis* is enabled to secrete, at regular and alternate distances, substances so different as its horny and calcareous joints. Thus, though we can interpret nature to a certain extent, and derive infinite gratification from the constant discovery of new beauties in her works, we can never hope, by entirely revealing her secrets, to deprive future generations of the same source of pleasure and stimulus to active inquiry; indeed, the march of physical science is only the discovery of new, unexplored, and endless regions of research, which would go on progressively increasing were man to live to eternity.

[From Chambers' Edinburgh Journal.]

CLIMATE.

Of all physical phenomena, none are more generally interesting than those of climate. Our com-

fort depends so much upon the state of the weather, that it becomes a frequent subject of consideration. Many important and striking facts have been ascertained, by observation and scientific inquiry, respecting the general phenomena of climate, which it is both useful and interesting to know.

The extreme range of variation of temperature is less in an insular than in a continental situation in the same latitude. The temperature of the sea being more equable, tends to temper the extremes in the former situation; and hence the climate of Great Britain is temperate compared with that of countries in the same latitude in the north of Europe and America. From the same cause, a small or narrow island will have a more equable climate than a larger one in the same latitude. And, on the same principle, a narrow portion of the same island will possess a more moderate climate than the broader portion, other circumstances being the same. It would appear from this, that the climate of Scotland may be more equable than that of England, not only because it is narrower, but also because England is less exposed to the influence of the ocean, and, on the south east, nearly contiguous to the Continent. Not only ought the variation between the extremes in Scotland to be less than in England, but the winter, except in the Highlands, may be more moderate in Scotland.—These conclusions, however, must be a little modified by the difference of latitude, which will cause a difference of a few degrees in the mean temperature. But from the causes that tend to produce a more equable climate in Scotland, its winter may really be more moderate, comparing especially the eastern coasts, as the neighborhood of Edinburgh and London. To judge, at least, from a register kept in Edinburgh during the last winter, the average temperature of which did not certainly exceed the mean winter temperature, it would appear that the cold in London was considerably greater in several instances than in Edinburgh.

The only source of heat is the sun, unless to this be added the internal heat of the earth, which, if it does exist, has a very small influence. Were the temperature of the earth to depend merely on the direct influence of the sun, a great portion of it would be rendered uninhabitable. Only a narrow portion, less than the temperate zones, could be at all inhabited; the middle zone, from the unrestrained influence of the sun, becoming an arid waste, and the polar regions being subject to half-yearly alternations of insupportable cold and oppressive heat.

But in no department of nature is the economy established to effect an important end, more conspicuous than in the arrangement for the distribution of temperature over the earth's surface. The whole earth may be considered as receiving at all times the same quantity of heat from the sun; for the smaller distance of that luminary at a particular stage of the earth's orbit can cause no appreciable difference. It is manifest that the average quantity of heat derived directly from the sun by any portion of the earth's surface, depends on its distance from the equator; for the length of the day and the obliquity of his rays depend on this.—If a sheet of paper be held so that the rays of the sun may impinge upon it, first perpendicularly and then obliquely, the quantity of heat intercepted in the former case is obviously greater than in the latter: so the quantity of direct heat from the sun diminishes as we recede from the equator, although in some cases this deficiency is more than compensated by the increased length of the day. The climate of any place, therefore, will depend partly on its aspect or its inclination north or south; the climate in this hemisphere on the north side of a hill is colder than on the south. In the Vallais in Switzerland, there are snow and ice on one side of a mountain, and vineyards and orchards on the other. Notwithstanding the great absorption of the sun's rays in passing obliquely through the atmosphere—nearly a half of them being lost at an inclination even of 40 degrees—such is the accumulation of heat arising from the increased length of the day in summer in higher latitudes, that Fontana has shown, that, in the middle of summer, the heat of the day at Pavia is scarcely greater than at Petersburg, being only one-sixtieth more, although the difference of latitude is fourteen degrees: and he has also proved that for more than two months in summer, the heat in 24 hours, derived from the direct influence of the sun's rays, is greater at the north pole than at the equator.

The principal agent in the distribution of temperature, is the atmosphere; next to it in efficiency is the sea; but the earth is so bad a conductor of heat—the calorific impressions at its surface taking perhaps a month to descend one foot—that its influence is small in this process. The high temperature of the the tropical regions diminishes the density of the air, disturbs the atmospherical equilibrium, and the lighter air ascends, its place being occupied by colder air from higher latitudes; and a constant current is thus established between the pole and the equator at the earth's surface, and between the equator and the pole in the higher regions of the air. The two lower currents from opposite poles acquire only gradually the increasing easterly motion of rotation of the earth's surface in their progress to the equator, and, therefore, they fall back towards the west, and, meeting at the equator, their opposite north and south motions destroy each other, and only their westerly motion remains, thus forming a westerly current called the *trade-winds*. Another provision is made, peculiarly adapted to moderate the opposite extremes which would otherwise take place in the polar regions.—The process of congelation of water during winter, and the liquification of the ice during summer, respectively evolve and absorb as much heat as tempers the two extremes. For example, the heat required to dissolve one inch of ice would raise the temperature of 125 inches of water one degree.—The heat disengaged by freezing also prevents rivers from being frozen to the bottom, and the heat absorbed in the melting of snow causes the process to be gradual, which, were it sudden, would sometimes cause torrents that would inundate the country, carry destruction before them, wash all the soil in course of time into the sea, lay bare the rocks, and convert the surface of the earth into a rocky, dreary, unproductive, and, therefore, uninhabitable waste. Cold winds from high latitudes would reduce the temperature of the sea at the surface much lower than its ordinary temperature, were it not for the circumstance that a stratum of water at the surface, when its temperature is reduced below that of the water under it, becomes more dense and falls down, leaving a warmer surface to be acted upon; and thus the whole mass of water must have its temperature reduced to 42 degrees, at which the density of water is a maximum, before it be possible to reduce that of the surface any lower. This preserves a remarkable uniformity of temperature at the surface of the ocean.—The polar and tropical currents of the sea also tend to equalize its temperature. Were the surface of the whole earth covered to an equal depth with water, the sun's heat would produce currents similar to those of the atmosphere. These would, however, be modified by the law of maximum density of water stated above. The warm water at the surface of the tropical ocean, would flow towards the poles in an easterly direction, like the upper currents in the atmosphere, and there would be a current at the bottom towards the equator in a westerly direction. But as the densest water would be, not at the poles, but at the latitude of 65 degrees, where the mean temperature is 42 degrees, the water from this latitude would flow along the bottom of the sea towards the equator and pole in opposite directions, and a current at the surface would flow from the pole, in a westerly direction, and from the equator in an easterly direction, towards this latitude. But as the depth of the sea varies from nothing to ten miles, and as it is intersected by irregular continents, these currents will be completely altered. There is a westerly current in the tropical ocean, which appears to be caused by the action of the trade-winds on its surface. A division of this current in the Atlantic, called the Great Gulf Stream, flows westerly along the south coast of the Gulf of Mexico, then along its west and north coasts, and afterwards along the east coast of North America to about the latitude of 43 degrees, when its direction becomes easterly till it reaches the west coast of Europe, where it divides into two streams, one of which proceeds towards the coast of Norway, and the other enters the Mediterranean.

Climate will be modified by the prevalent winds. A current of air flowing over a surface of land or water of a different temperature, becomes, in the course of an hour, of the same temperature to the height of 80 feet. But the temperature of the earth's surface will also be slowly altered, and will approximate to that of the wind, if it continue for

a considerable time. A mild westerly wind, for example, blowing through Europe, will gradually raise the temperature from the west coast, where it will be greatest, towards the interior; and, if it were to continue long enough, the influence of its temperature might reach the interior of Asia. Severe winters are caused by the prevalence of northerly winds; and when they continue long, they must be caused by a southerly wind at the polar regions from the opposite side of our hemisphere, and they should therefore mitigate the climate at the pole. This explains the paradox observed by those engaged in whale-fishing in the Arctic Seas, that a severe winter here is succeeded by a more open sea in these regions. It has been observed that the mean temperature of the east coast of North America is lower than that of the west coast of Europe; and it is found to be generally true, that the climate on the west coasts of continents is milder than that of the east. But in the tropical regions the reverse is the case. The sea has little effect in tempering the excessive heat on the west coasts within the tropics, but its influence is great upon the east coasts. This no doubt depends on the fact, that within the tropics the prevalent wind is easterly. As westerly winds are more prevalent within the temperate zones, it is probable that the milder climate of the western coasts in these regions depends on this cause.

Lines drawn on the surface of the earth, and passing through places which, on the same level, would have the same temperature, are called *isothermal lines*; or, as the temperature does not vary sensibly for a small distance north or south, the narrow zones, comprehending places of the same temperature, are called *isothermal bands*. The isothermal bands of mean annual temperature, as they proceed easterly in the continents in the northern hemisphere, decline towards the south; those of mean winter temperature decline still farther south; whereas those of mean summer temperature decline as much towards the north. The mean temperatures in latitude 50 degrees on the east of North America and the west of Europe, are respectively 37 and 50 degrees of Fahrenheit, differing by 13 degrees. But the mean annual temperatures of Pekin and Philadelphia, both near the eastern coasts of two continents, and of nearly the same latitude (39 degrees,) is the same, or 55 degrees. The isothermal band of mean annual temperature through St. Maloes, latitude 48 degrees, passes through Pekin, latitude only 40 degrees, the mean temperature being 55 degrees.—The isothermal line of mean summer temperature of 70 degrees, from Bourdeaux, latitude 45 degrees, passes through Warsaw, latitude 52 degrees; and that of mean winter temperature, 37 degrees, passes through Edinburgh and Milan, or nearly at right angles to the former. Of places on the same meridian, those have the greatest difference of seasons that have the greatest latitude; and of those which lie on the same isothermal band of mean annual temperature, that which has the less latitude has a greater extreme difference of temperature. The difference of seasons in places on the eastern coasts of continents in the northern hemisphere, is thus greater than on the western coasts; but although the whole range of variation be greater in the former, the changes of weather are generally more gradual than on the western coasts. Owing to a greater extent of sea, the climates in the southern hemisphere are more uniform, so that there the isothermal bands lie nearly in the direction of the parallels of latitude. Thus Buenos Ayres, the Cape, and Port Jackson, nearly in the same latitude, lie nearly in the same isothermal band of mean annual temperature.

The temperature of the southern hemisphere is lower than that of the northern. In the torrid zone, however, there is little difference of temperature for the same north and south latitudes.—The cause of this lower temperature is not well known. Some account for it from the fact, that the smaller extent of land in that hemisphere, and its position, permit the polar current to flow more freely towards the equator, carrying the circumpolar ice to a lower latitude, sometimes to the parallel of 45 degrees, which, during its liquification, absorbs heat and reduces the temperature. But this cause is certainly inadequate. May not the greater evaporation from a greater surface of water be a sufficient cause? No doubt the heat absorbed by evaporation is again given out when the vapour is condensed; but as the deposition general-

ly happens at a considerable height, the increase of temperature from this cause would not be sensible at the surface.

Elevation has an influence upon climate. The temperature of the atmosphere diminishes about one degree for every 90 yards of ascent, although the decrease becomes slower as the altitude increases. It appears that the diminution of temperature for every 110 yards of elevation, is nearly the same as for one degree of increase of latitude on the same level. There is a point at a certain height in every latitude at which the mean temperature is that of freezing, or 32 degrees; and the curve passing through all these points for the same meridian, is called the *curve of perpetual congelation*. At the pole its height is 0; in latitude 56, it is at the height of 5,300 feet; and at the equator, at a height of 15,000 feet. The climate on the table-lands in the tropical regions is therefore as moderate as that of the temperate zones, and thus the extent of habitable country is increased. From the bases of the mountains within the tropics, up to the limit of perpetual snow, is found all the variety of climates in the world, and some of their natural productions.

An important element of climate is humidity.—It is a remarkable fact, that, although there is a constant evaporation at the earth's surface, and the atmosphere in the region of the clouds is in a state of saturation, yet it is generally comparatively dry at the earth's surface. This arises from the fact that the temperatures of the air and of an atmosphere of vapour follow different laws; the temperature of the latter not diminishing so fast upwards as that of the former. If the temperatures of both, therefore, at the earth's surface, were the same, that of the vapour would be higher at any given height. But as the body of common air is much greater than that of the vapour, which is seldom one-fortieth part of the whole, the temperature of the latter is reduced in the higher parts of the atmosphere; and hence, also, its density and pressure diminish, so that the vapour of the earth's surface will be under less pressure, and will therefore expand; and its density thus diminishing, the air at the surface will not be in a state of saturation.—Were the law of temperature the same for both, the atmosphere would be always in a state of saturation, and the least depression of temperature would occasion fogs and drizzling rains. By this simple provision, however, this evil is prevented, without affecting that frequent supply of moisture which is necessary for the fertility of the soil.—The quantity of moisture in the atmosphere of any place depends much on the character of the surface. Over the sea, where the evaporation is greater, the atmosphere is more moist than over the land; and over an insular situation than over a continent. The quantity of evaporation depends on the difference between the actual quantity of moisture in the atmosphere at any time, and the whole quantity which it is then capable of holding in solution when saturated. Humboldt found, in crossing the Atlantic, that the quantity of vapour in the tropical atmosphere is nearer to the point of saturation than in the temperate zone, so that the evaporation is less than would be expected from the high temperature. The cause of rain in most cases depends on the law discovered by Dr. James Hutton, that when two currents of air of different temperatures are mixed, although the temperature of the mixture is a mean, yet their solvent power is less than a mean; and, therefore, if the two currents be previously at, or nearly at, the point of saturation, a part of their moisture will be precipitated, and rain will be the consequence. A change of wind, therefore, often causes rain; and, in fact, in this climate, rain seldom happens without a change of wind, or a change of wind without rain. The number of inches of rain stated to fall at any place in a year, means that if all the rain that falls during that period were to remain stationary, it would stand at that depth. The annual quantity of rain generally diminishes as we recede from the tropics, although local circumstances sometimes cause a slight departure from this rule. In St. Domingo, the annual quantity of rain is no less than 120 inches; at Rome, 36; at London, 24; at Kendal, 60; at St. Petersburg, no more than 16.—There are some spots of continual rain, which appears to be caused by the meeting of opposite currents of wind. Over some of the immense forests of Guayana, the weather is wet nearly all the year. There are other tracts of land where it

scarcely ever rains, as Egypt, the deserts of Arabia and Africa, and over several hundreds of miles of the coast of Peru. At Cumana, the annual quantity is only eight inches; and in other places on the coast of South America, none falls for several years, and yet vegetation is remarkably strong, on account of the humidity of the atmosphere. Tracts where no rain falls are generally deserts and far inland, without any irregularities of surface to cause variable currents of air; and when high grounds occur in these tracts, there is a frequent precipitation of moisture, commonly in the form of dew, which forms springs, and produces great fertility.

It is only in temperate regions that four seasons can be distinguished, or between the latitudes of 40 and 60 degrees in Europe; the extent is less in Asia and America. Between the parallel of 60 degrees and the pole, only two seasons are distinguishable. From the length of the day, notwithstanding the obliquity of the sun's rays, the heat in the north of Europe in the beginning of summer is so great, that the snow is dissolved in the course of three or four days, and the flowers very soon begin to blow. In Norway, as high as latitude 70 degrees, the thermometer sometimes stands as high as 80 degrees; and, in higher latitudes, the pitch on ships' sides melts and runs down. On the west side of Greenland, between the latitude of 60 and 75 degrees, for two months in summer the surface is verdant, and bears tolerable pasture. The quantity of heat at the pole in the middle of summer is one-fourth greater than at the equator, which is chiefly expended in dissolving ice, and is capable of melting five inches in one week. On account of the foggy atmosphere in the beginning of summer, little heat is lost by radiation, and the whole quantity of ice dissolved may be about four feet. In the arctic regions, the breaking up of the ice begins in June; and as the temperature of the water changes more slowly than that of the air, its lower temperature at this time condenses the vapour in the moist and warmer air; fogs are thus occasioned, which, however, soon disperse, and for a few weeks fine weather prevails. Towards the end of August, the signs of approaching winter appear. Snow occasionally falls, and the temperature of the atmosphere, becoming less than that of the water, condenses the vapour, and forms fogs called the *frost-smoke*. These fogs disappear as soon as the ice has extended over the frigid regions, and two or three months of clear weather succeeds. The extent of variable ice frozen and dissolved every season is about 1400 miles long and 80 broad.

The periodical rains within the tropics divide the year there into two seasons, the *dry* and the *rainy*. The dry season is owing to the constancy of the trade-winds. It takes place in the northern half of the torrid zones during our winter months, or from October till April. During this season, the immense plains, lately covered with the most refreshing verdure, become scorched and arid; the alligator and large serpents lie in a torpid state in the dried mud till the first rains arouse them from their lethargy. About the beginning of March, as the sun enters the northern signs, the trade-wind grows weak, and is often interrupted by calms, for the difference of temperature between the northern half of the torrid and the temperate zones now diminishes: Instead of the hot and moist air now ascending as formerly, and proceeding in the northerly upper current, it remains nearly stationary, and, under the influence of a vertical sun, the vapours accumulate, mountains of clouds are formed, and, as an indication of the great commotion now beginning in the atmosphere, detached clouds are carried through it with a rapidity little in accordance with the gentle breeze below. Violent thunder-storms now take place, the rains descend in torrents, and the rivers overflowing their banks, inundate the extensive plains. When the sun re-enters the southern signs, the temperature becomes more moderate; the sky gradually clears and resumes its usual serenity. In the circumstances of these two seasons, another instance of a wise arrangement is observable. Instead of the unrestrained heat of a vertical sun scorching the earth, destroying vegetation, and rendering the climate insupportable, it counteracts its direct influence by means of its own indirect action through the medium of the atmosphere.

The belief is very common that there has for several centuries been a gradual deterioration of climate in Europe. It appears, however, that, in the

time of Julius Cæsar, it was more severe than now. In his time vines could not be cultivated in France, and the Tiber was often frozen over. It is not above a century since the thermometer has been improved to give sufficiently accurate indications; and during that period there has been little or no change of mean temperature—that is, temperature on the whole throughout the year. If the mean temperature, however, be much the same now as formerly, there is this remarkable change in its disposal. The cold of winter is now mixed with the heats of summer, while the heats of summer are similarly mixed with the cold of winter; in other words, there is an amalgamation of seasons, or, in some degree, a generalisation of heat and cold throughout the year. A change of this nature would seem to be a regular result of the improvement in the surface of a country. A few centuries ago, our country was covered with forests and morasses, at least abounded in wild uncultivated tracts. Then, as is now the case in North America, heat and cold were felt in extremes—burning summers and keenly freezing winters. Now, our country is reclaimed: forests and bogs have disappeared, and the whole face of nature, embellished by the diligent hand of the husbandman, exhibits features calculated at once to delight the eye and to testify how much a climate may be changed for the better by the efforts of skill and industry.

(For the Zodiac.)

ORIGINAL ANECDOTES OF BONAPARTE.

(Continued.)

BONAPARTE AND TALLEYRAND.

These two great geniuses understood each other perfectly well in one point—*money*. Bonaparte used to say, that with money he could buy every one, and Talleyrand, without speaking of it, put daily into practice the horrid theory of his master.

When Bonaparte was named general, and previously to his departure for Italy, they had very frequent intercourse, and lived since then, and particularly after Bonaparte's return from his first campaign in Italy, in a certain intimacy and even familiarity. Bonaparte's quick eye saw, in Talleyrand, a man of genius, flexibility and penetration, perfectly able to settle the most complicated matters in a short time. Lucien Bonaparte, in his Memoirs, in speaking of the difficulties of the directory with Russia and the Ottoman Porte, says of him, "that there was but one man to be sent to Constantinople, *Talleyrand*." Napoleon besides, knew that Talleyrand, as minister of foreign affairs, and friend of Barras, the president of the directory, would powerfully assist him in his already rising ambition. Talleyrand, from his side, admired the deeds and the profoundness of views of this young soldier, and foresaw the future greatness of his career. Thus, both acted in perfect harmony, but, singularly enough, both mistrusting each other, as both were cunning and ambitious, the one of glory, the other of money.

From this moment, Talleyrand attached himself to the young hero—served him because it was his interest—corresponded regularly with him, when Bonaparte was at the head of the Italian army—gave him regularly a detailed account of the secret transactions of the directory—and when the general arrived at Paris, Talleyrand was the first person whom he saw, and with whom he had a long conversation.

The minister, generally very cautious and circumspect, laid, on this occasion, his wonted prudence aside, and gave various brilliant fêtes in his honor. In one of these *soirées*, in which Bonaparte generally appeared like a meteor, given by the minister in his honor, he remained scarcely a few minutes with the ladies, and suddenly took his club-footed friend under the arm and said to him,

"*Allons nous en causer.*" His movements were so quick that the lame minister could follow him but with great difficulty. They conversed in a private room a long time together, and this done, Bonaparte left his wife and daughter in the saloons and drove home.

A short time after the expedition to Egypt was fitted out, and ended so unfortunately, some accused Talleyrand of perfidy, and said that he had suggested the plan to the directory as the best means of getting rid of such a dangerous man, whom the directors feared greatly, as his popularity increased daily, whilst theirs declined. Other well informed persons say positively, that it was Bonaparte himself who suggested the idea, which, if successful, would have given a gigantic aspect to the whole miserable, whimsical political European system. Whether Bonaparte or Talleyrand had this idea first, the fact is, that their secret conferences, after some weeks of Bonaparte's stay in Paris, had turned upon this great and bold plan. Having beforehand arranged and ripened this idea, Talleyrand, with his wonted skill, sounded Barras; and knowing well the secret fear of the five directors, obtained easily, not only their consent, but every imaginary assistance, to hasten its immense preparations.

It is farther said by some persons, that, at the moment of embarkation, General Bonaparte hesitated to leave France; but this appears utterly destitute of truth, when we consider the decided and ardent character of the *General* Bonaparte, and compare it with the unhappy vacillations or indecision with which the *Emperor* Napoleon acted in 1813 and '14. At the time of the expedition of Egypt, it would have cost him but very little to have overthrown these five directors, among whom not one had energy, talent and popularity enough to resist the powerful General. It is asserted, but not certain, that Talleyrand, in his private conferences with the young general advised and urged him even to overthrow the directory, and place himself at its head, as he did later; but Bonaparte thought public opinion not yet prepared enough to run the risk, and expose France to be ruined by a civil war. He therefore postponed the stroke, hoping that, after the conquest of Egypt, Syria and the English possessions, he could return, and by these new laurels, acquire strength enough to strike the blow which it is certain he had had in view, before he embarked for Egypt. It is also certain that Talleyrand, through female agents, and a concerted key between him and Bonaparte, found the means to correspond together, and to give the general an exact account of the situation of France and the doings of the directory. These chifred letters were sent to Hamburg by triplicates, went from there to England, then to Malta, and addressed finally to a commercial house established at Alexandria, and delivered to a secret agent named by Bonaparte. It was by these means, that the general determined to leave his army in a frail embarkation, and come with a few well known and entirely devoted friends to France.

D. H.

[For the Zodiac.]

THE HOLY LAND.

As "one star, differeth from another star in glory," as there are elevations and depressions in the worlds of mind and of matter, so there are portions of the earth, from which we turn with comparative indifference, while the mere mention of others opens the flood-gates of the soul, pouring over it the full tide of thought and emotion. They have become

associated in our minds with all that is great and noble; they are to us the records of the glorious past. The least feature in their history becomes of importance, their very dust is sacred, and even their air, seems a rarer element than that of earth. They are to us as the "shrine of the Prophet," and we seek them in many a pilgrimage of the soul.

As we turn to the East, to behold the light of returning day, and see the misty shadows of night retiring at its approach, so to the East do we look for the dawn of created beings, for the morn of human existence, for the early days in the history of a world.

The Holy Land! it is the spot where were found "mighty men of old, men of renown;" where flourished a powerful empire; where dwelt a peculiar people—the chosen of Heaven. There was unfurled the banner of the Crusaders; there a mighty host followed the sacred cross, as it led them to "victory or death." The Holy Land! the fount of inspiration! the residence of the Divinity! the type of Heaven!

The historian, and philosopher, the poet, and the Christian, have each dwelt delighted upon this theme, and as a consequence, we have numerous descriptions of the promised land, and many a history of that enigmatical people—the Jews.

One who has examined, compared, and endeavored to reconcile these works, from the voluminous details of Josephus, to the eloquent rhapsodies of Lamartine, has given to an attentive auditory the result of his investigations. By permission of the author, it is proposed to give in this, and succeeding numbers, a sketch of the subjects comprised in these lectures.

The country of the Jews, has been designated by various appellations: 1st. Land of Canaan, from Canaan, the son of Ham, by whom it was peopled. 2d. Land of Israel, from Jacob, surnamed Israel. 3d. Land of Promise, having been promised to Abraham and his descendants. 4th. Land of Judea, from the tribe of Judah. 5th. Land of Hebrews, from Eber. 6th. Land of Palestine, that being originally the Greek name of the land of the Philistines. 7th. Holy Land, having been the residence of God's peculiar people, and having given birth to the Messiah.

Palestine, washed by the Mediterranean upon its western border, extended east to the Jordan, that being originally its boundary. The space between these, was fifty miles in the widest part. At one period, the conquests of the Jews extended ninety-five miles east from the Mediterranean. Its length was 190 miles. The population of Judea has been variously estimated at five and ten million. It probably amounted to seven million. This was an immense population for a territory so small in extent, but it seems not improbable, when we remember the habits of the people, and the great fertility of the soil. Palestine is diversified by hills and valleys, and its climate is as various as its surface. When intensely hot on the plains, there were refreshing breezes playing over the hills, while upon the mountains it was severely cold. The heat was often followed by intense cold at night. The dry season commenced in May, and continued until September. During this period, the inhabitants were supplied with water from their reservoirs, and when these failed, it was often brought from a great distance. This explains many allusions in Scripture. The blessings of salvation are compared to a river; the hope of the Christian is like a fountain in the desert; and the "water-brooks" are the emblems of rich and unmerited blessings. "A cup of cold water" was a precious boon, and

"the green pastures and still waters" shadowed forth the blessings of the Better Land. During the wet season, the rain descended in torrents, and at times swept over the land with the fury of a deluge. Thus we see the force of the parable, of "the foolish man who built his house upon the sand."

Among the most remarkable of the trees of Palestine, was the sycamore, fig-tree, whose fruit grew upon its trunk. This was generally planted by the road-side. The palm tree often attained the height of fifty or sixty feet. It has no branches but its leaves and fruit, the date, form a verdant and beautiful crown. The stately cedars of Lebanon bear a cone of immense size. These trees are thirty or forty feet in circumference.

After the Jews had taken possession of the land, it was divided by lot among the twelve tribes. The portion of the tribe of Levi, consisted of forty-eight cities. Their place among the tribes, was supplied by making each of Joseph's sons the head of a tribe. After the death of Solomon, a different division of the land took place, as ten of these tribes revolted from Rehoboam. The kingdom of Israel included all east of the Jordan, and the portion northwest of that river. The kingdom of Judea included the southern part of the land. In the time of Christ, the country east of the Jordan was called Perea. The northern part, west of that river, was styled Galilee, the central part Samaria, and the southern Judea. Samaria lying between Galilee and Jerusalem, explains that passage, "And he must needs go through Samaria."

Scattered through the twelve tribes, were the "cities of Refuge." To these persons guilty of manslaughter might flee from the avenger of blood, and be safe until the trial could take place. If guilty, they were then subject to the full rigor of the law. If innocent, they could abide in the city until the death of the High Priest, when he was free. The roads to these cities were obliged to be kept open, and the bridges in repair. In every high way leading to them, there were posts inscribed "REFUGE." These cities were types of the Messiah, and in him is eternal safety.

TABLE TALK.—By the late "Elia"

The greatest pleasure I know, is to do a good action by stealth, and to have it found out by accident. 'Tis unpleasant to meet a beggar. It is painful to deny him: and, if you relieve him, it is so much out of your pocket.

Men marry for fortune, and sometimes to please their fancy; but much oftener than is suspected, they consider what the world will say of it, how such a woman in their friends' eyes will look at the head of a table. Hence we see so many insipid beauties made wives of, that could not have struck the particular fancy of any man, that had any fancy at all. These I call *furniture wives*: as men buy *furniture pictures*, because they suit this or that niche in their dining parlors.

Your universally cried-up beauties are the very last choice which a man of taste would make. What pleases all, cannot have that individual charm, which makes this or that countenance engaging to you, and to you only perhaps, you know not why. What gained the fair Gunning's titled husbands, who after all turned out very sorry wives? Popular repute.

It is a sore trial when a daughter shall marry against her father's approbation. A little hard-heartedness, and aversion to a reconciliation, is almost pardonable. After all, Will Dockwray's way is perhaps the wisest. His best-loved daughter made a most imprudent match; in fact, eloped with the last man in the world that her father would have wished her to marry. All the world said that he would never speak to her again. For months she durst not write to him, much less come near him. But in a casual rencounter, he met her in the streets of Ware:—Ware, that will long remember the mild virtues of William Dockwray. What said the parent to his disobedient child, whose

knees faltered under her at the sight of him? "Ha, Sukey. is it you?" with that benevolent aspect with which he paced the streets of Ware, venerated as an angel, "come, and dine with us on Sunday:" then turning away, and again turning back as if he had forgotten something, he added, "and Sukey, do you hear, bring your husband with you." This was all the reproof she ever heard from him. Need it be added, that the match turned out better for Susan than the world expected?

"We read the *Paradise Lost* as a task," says Dr. Johnson. Nay, rather as a celestial recreation, of which the dullard mind is not at all hours alike recipient. "Nobody ever wished it longer:"—nor the moon rounder, he might have added. Why, 'tis the perfectness and completeness of it, which makes us imagine that not a line could be added to it, or diminished from it, with advantage. Would we have a cubit added to the statue of the Medicean Venus? Do we wish her taller?

Lear.—Who are you?
Mine eyes are none o' the best. I'll tell you straight. Are you not Kent?

Kent.—The same: your servant Kent.
Where is your servant Caius?

Lear.—'Twas a good fellow, I can tell you that: He'd strike, and quickly too; he is dead and rotten.

Kent.—No my good lord: I am the very man—

Lear.—I'll see that strait—

Kent.—That from your first of difference and de-

Have followed your sad steps. [cay]

Lear.—You are welcome hither.

Albany.—He knows not what he says: and vain

That we present us to him. [is it]

Edgar.—Look up, my lord. [hates him]

Kent.—Vex not his ghost. O, let him pass. He

That would upon the rack of this rough world

Stretch him out longer.

So ends 'King Lear,' the most stupendous of the Shakspearian dramas: and Kent, the noblest feature of the conceptions of his divine mind. This is the magnanimity of authorship, when a writer, having a topic presented to him, fruitful of beauties for common minds, waives his privilege, and trusts to the judicious few for understanding the reason of his abstinence. What a pudder would a common dramatist have raised here of a reconciliation scene, a perfect recognition, between the assumed Caius and his master!—to the suffusing of many fair eyes, and the moistening of cambic handkerchiefs. The old dying king partially catching at the truth and immediately lapsing into obliviousness, with the high-minded carelessness of the other to have his services appreciated, as one that

—served not for gain,

Or followed out of form,

are among the most judicious not to say heart-touching strokes in Shakspeare.

Allied to this magnanimity it is, where the pith and point of an argument, the amplification of which might compromise the modesty of the speaker, is delivered briefly, and, as it were *parenthetically*: as in those few but pregnant words, in which the man in the old "Nut-brown Maid" rather intimates than reveals his unsuspected high birth to the woman:—

Now understand, to Westmoreland,

Which is my heritage,

I will you bring, and with a ring,

By way of marriage,

I will you take, and lady make.

Turn we to the version of it, ten times diluted, of dear Mat. Prior—in his own way unequalled, and as a poet now-a-days too much neglected—"In me," quoth Henry, addressing the astounded Emma—with a flourish and an attitude, as we may conceive:—

"In me behold the potent Edgar's heir

Illustrious Earl! him terrible in war,

Let Loire confess."

And with a deal of skimble-skamble stuff, as Hotspur would term it, more, presents the lady with a full and true enumeration of his Papa's rent-roll in the fat soil of Deva.

But of all parenthesis, (not to quit the topic too suddenly,) commend me to that most significant one, at the commencement of the old popular ballad of Fair Rosamund:—

When good King Henry ruled this land,

The second of that name,

Now mark—

(Besides the Queen,) he dearly loved

A fair and comely dame.

There is great virtue in this *besides*.—*Athenicum*.

METEOROLOGICAL TABLE FOR OCTOBER, 1836,

KEPT AT THE ALBANY ACADEMY.

Days Month.	MORNING.			EVENING.			THERMOMETER.				WINDS.			WEATHER.		RAIN GAGE.	REMARKS.
	Barometer.	Attached Thermom.	Wet Bulb Thermom.	Barometer.	Attached Thermom.	Wet Bulb Thermom.	6 1/2 A. M.	3 P. M.	9 P. M.	Mean.	8 A. M.	Noon.	10 P. M.	Morning.	Evening.		
1	30.20	53.	48.25	30.12	57.5	52.	49	60	54	56.17	SW	S	S	Clear.	Cloudy.	0.66	Rain, 1 P. M.
2	29.76	62.	59.25	29.855	57.	53.75	60	54	48	50.67	S	S	N	Cloudy.	do		
3	29.975	53.	49.	29.90	53.	47.	40	56	44	47.33	N	N	N	Clear.	Clear.		
4	29.89	51.	46.50	29.85	52.	47.	44	56	48	48.00	N	NE	NW	do	Cloudy.		
5	29.59	44.	37.50	29.41	46.	41.5	36	41	41	39.67	NE	NE	NE	Cloudy.	do	1.05	Slight, P. M. & eve.
6	29.63	44.5	40.	29.77	46.	41.25	38	46	42	42.67	W	W	W	do	do		All day.
7	29.96	48.	46.	30.02	49.	44.25	42	52	46	46.50	N	NW	NW	Clear.	do		
8	30.22	49.	47.	30.21	49.	46.	41	54	40	44.17	N	SE	N	Cloudy.	do		
9	30.36	44.	42.	30.31	48.	43.	36	52	42	42.67	N	NW	N	Clear.	do		
10	30.38	43.	40.	30.35	45.5	40.	32	49	37	39.17	N	N	N	do	Clear.		
11	30.44	39.	36.	30.325	45.	41.	31	48	43	41.00	NNE	NNE	NNE	do	Cloudy.		
12	29.81	39.	34.	29.70	39.	34.	33	36	34	34.50	NNE	N	N	Cloudy.	Clear.	1.14	Rain and snow.
13	30.00	39.	40.	29.93	45.	44.	34	52	48	47.00	W	S	S	do	Cloudy.		
14	29.91	46.	46.	29.81	51.	51.	48	50	53	49.67	SSW	SSW	SSW	do	do	0.28	Rain.
15	29.86	47.5	48.	29.90	48.	43.25	44	54	43	45.67	N	NW	NW	Clear.	Clear.	0.02	Slight rain, 12 A. M.
16	29.79	43.	45.	29.85	48.	44.	36	51	44	44.17	W	S	W	Cloudy.	do		
17	29.83	45.5	44.	29.93	47.	37.75	39	56	37	43.83	SW	SW	NW	do	Cloudy.		
18	30.29	42.	40.	30.32	44.5	36.75	38	46	36	40.17	NW	NW	NW	Clear.	Clear.		
19	30.01	42.8	40.	29.76	50.25	50.25	39	52	58	53.50	SSW	S	S	Cloudy.	Cloudy.	0.02	Slight drizzling, A. M.
20	29.51	52.	43.5	29.70	45.	37.5	62	44	36	43.00	S	NW	NW	do	do	0.65	Slight, A. M.
21	29.775	42.	35.	29.95	40.	30.5	36	38	32	34.67	NW	NW	NW	do	Clear.	0.03	Rain A. M.
22	30.13	38.	34.	30.165	43.5	38.	32	49	39	40.67	SW	SSW	SSW	do	Clear.		Flurry of snow, P. M.
23	30.20	43.	42.25	30.075	50.	44.25	36	56	52	49.67	SSW	SSW	SW	do	Cloudy.		
24	30.02	49.25	49.	30.005	55.	51.5	46	63	51	50.50	SW	SW	NW	do	do	0.11	Rain early A. M.
25	30.33	39.5	31.	30.275	39.5	30.	29	39	30	31.67	N	N	N	do	Clear.		
26	30.12	34.5	29.	29.93	36.5	27.5	23	35	20	30.00	NW	NW	NW	do	Cloudy.		
27	29.87	35.	32.	29.76	39.5	31.5	27	40	30	31.83	N	SW	NW	do	Clear.		
28	29.88	35.75	36.	29.68	41.	38.	24	45	43	39.83	N	S	SW	do	Cloudy.		
29	29.76	41.75	39.	30.03	40.25	33.5	39	40	36	37.50	NW	NW	NW	do	do		
30	30.33	38.	32.	30.325	38.	30.	34	35	37	33.17	NNW	NW	NW	Cloudy.	Clear.		
31	30.425	32.	30.	30.345	36.	30.	21	39	30	30.50	N	E	E	Clear.	do		

RESULTS.

External Thermometer.

Mean of first half of the month,..... 44°99
Mean of second half of the month,..... 39.66
Mean of the whole month, 42.33
Fair days 15; cloudy 16; rain on 9 days; rain and snow 1; snow 1.
Rain Gage, 3 inches and 99-100ths.
Highest deg. 62; lowest 21.
Greatest monthly range 41.
Warmest day, 1st; coldest day, 26th.

Winds.—North 7 1/2 days; north-east 2 1/2; east 1/2; south-east 1/2; south 3 1/2; south-west 5 1/2; west 2; north-west 8 1/2. Prevailing wind, *north-west.*

Mean of Barometer, corrected for Capillarity, and reduced to 32°.

Morning, 30.062 inches.
Evening, 29.992 do.
Maximum, 30.463 do.
Minimum, 29.420 do.
Monthly range, 1.043 do

Dew Point.

Mean in morning, 34°79
Mean in evening, 36°27
Mean force of vapor, 0.244 inches.
Mean deg. of dryness, 11°10 thermometric scale.
do. moisture, 681. nat. scale Hygrom.
Least degree of moisture observed, 420.
Amount of evaporation, 3.534 inches.
Weight of Vapor in a cubic foot.
Mean, .. . 2.840 grains.
Maximum, 5.003 do.
Minimum, 2.361 do.

SONNET.

BEAUTY, sweet love, is like the morning dew,
Whose short refresh upon the tender green
Cheers for a time, but till the sun doth shew;
And straight 'tis gone, as it had never been.
Soon doth it fade that makes the fairest flourish;
Short is the glory of the blushing rose;
The hue which thou so carefully dost nourish,
Yet which at length thou must be forced to lose,
When thou surcharg'd with burthen of thy years,
Shalt bend thy wrinkles homeward to the earth;
And that in beauty's lease expir'd, appears
The date of age, the calends of our death.
But ah! no more: this must not be foretold:
For women grieve to think they must be old.

Daniel.

NOTICE.

Complaints are almost daily made to us, that the receipt of letters containing remittances, is not acknowledged. As our friends who complain, did not probably pay their postage, they can obtain their letters through the Post-Office. We take out those only whose postage, double or single, is paid. This, we trust, will satisfactorily explain our apparent neglect. We must again request all those who address us, to write distinctly their names, places of residence, county and state. No. 6 will appear before the end of the year.

THE ZODIAC,

Is published simultaneously, by DUCODRAY HOLSTEIN at No. 66 Chapel-street, Albany, and by BEHR and ASTOIN, No. 94 Broadway, N. Y., at one dollar per annum, payable in advance. All communications to be addressed as heretofore, post paid, to No. 66 Chapel-street, Albany, N. Y.

Edited by M. HENRY WEBSTER, Esq.

The size of the periodical is an imperial octavo, each number containing 16 pages. Its typographical execution will be carefully attended to. It is devoted to Science, Literature and the Arts, and will exhibit a faithful and instructive picture of the literary world passing through all its signs and seasons.

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The post-master general has decided, that this paper is subject to newspaper postage only: one cent to any part of this state, or 100 miles or less out of this state; one and a half cents for over 100 miles.

In compliance with the request of many of our subscribers, the present number appears without a cover. This alteration will, as respects postage, change the character of the Zodiac, from a periodical of two sheets to a newspaper, and at once reduce that expense one-half.

FROM THE STEAM PRESS OF
PACKARD & VAN BENTHUYSEN.

"The poetry of every nation (more than any other branch of its literature) is colored by the national character, as the wine of different soils has its raciness. That of the Italians, in that age, was graceful, delicate, fanciful, sometimes imaginative and sublime. With the Spaniard it was stately, solemn, and fantastic; often more full of sound than meaning, yet frequently both, in its grave and its humorous strains, worthy of a noble people. With the French, it was extravagant and empty, and in the worst acceptance of the word, licentious beyond that of any other nation, except at one time, the Italians; but in Italy the abomination was checked, while in France it continued in full vogue from generation to generation, till it produced a corruption and dissolution of manners, of which, happily for human nature, no other example has been known in the civilized world. In Holland, it seemed consecrated to patriotism & the household gods. The Dutch may be proud of their poets with as good cause as of their painters, their scholars, their seamen, their struggle against the Spaniards, and their country, in which art has achieved greater triumphs, and well directed industry has procured more general comfort, than in any other part of Christendom."—*Southey.*